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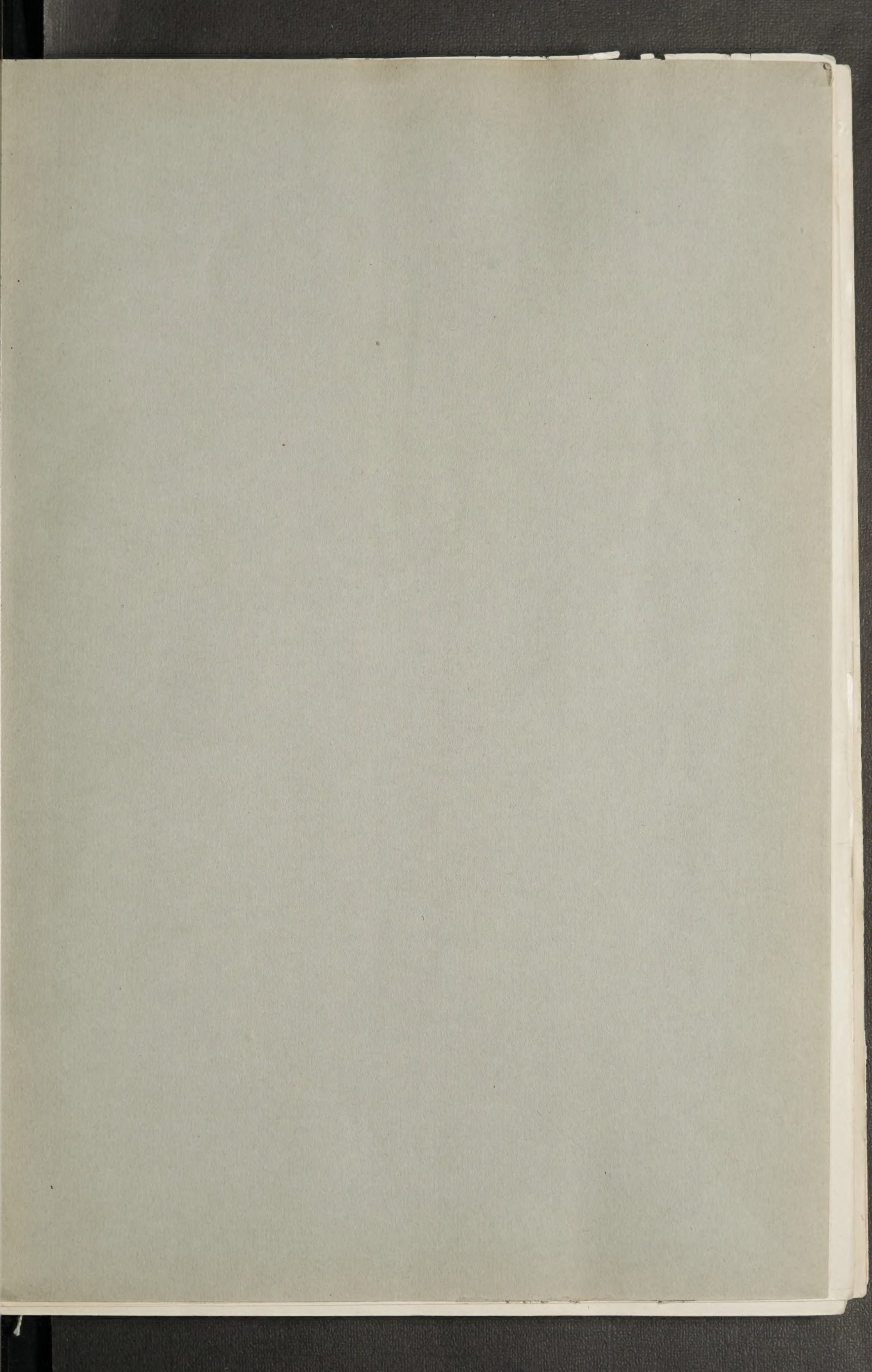
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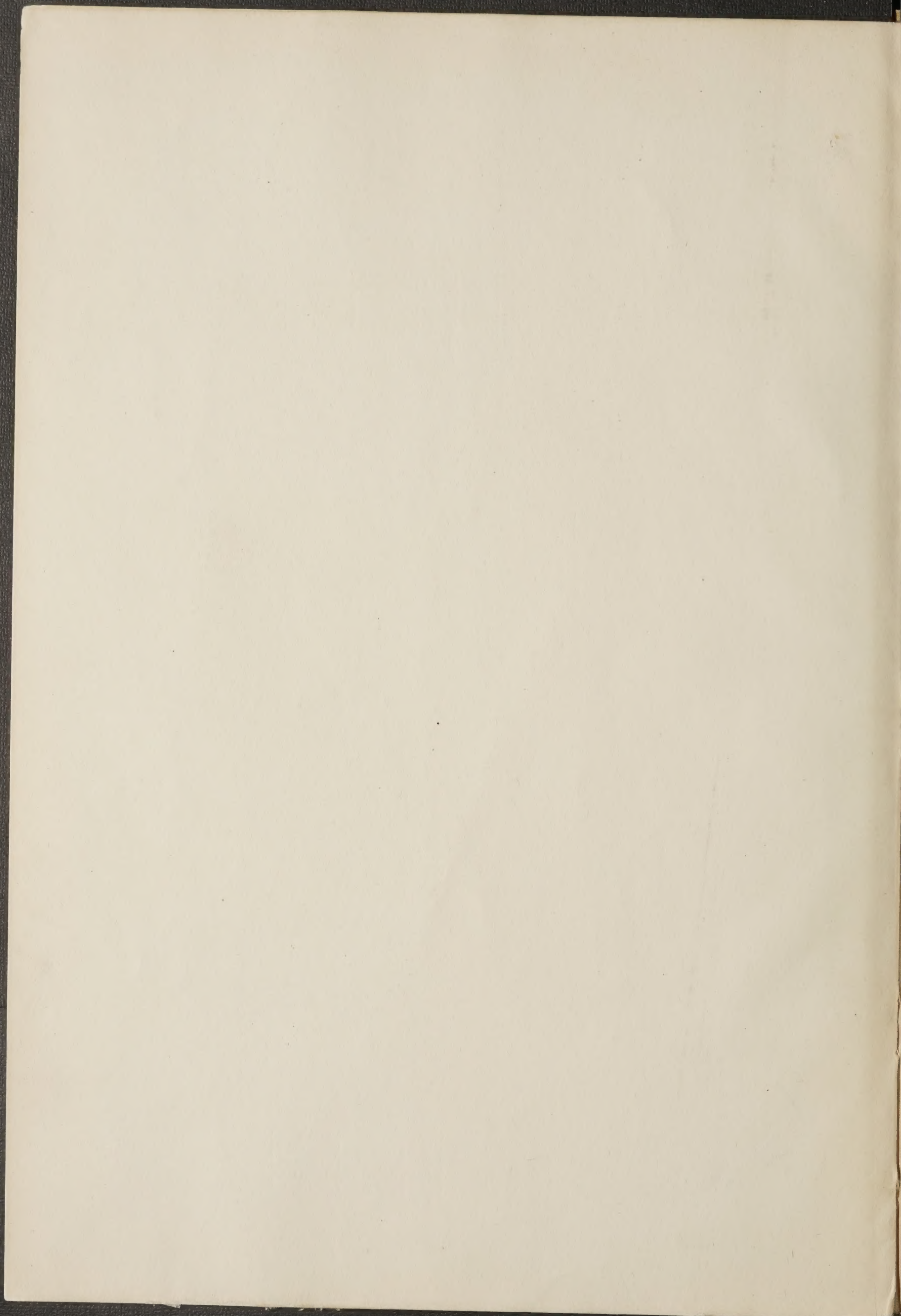
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THE Buick BULLETIN

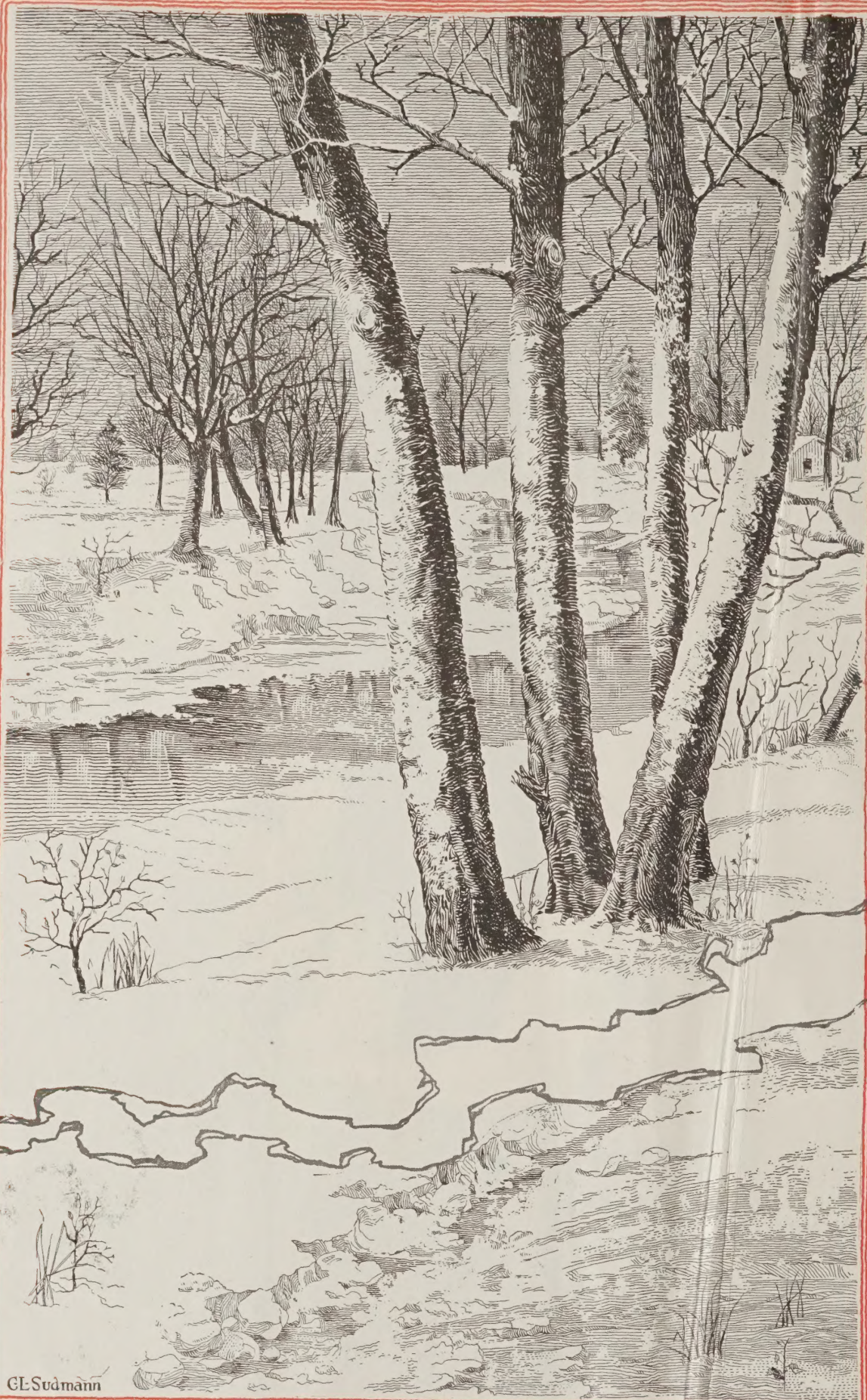
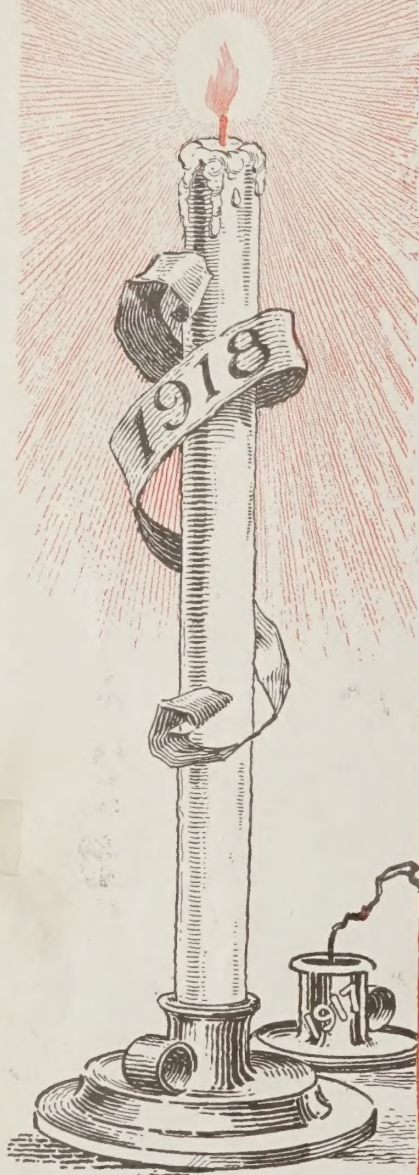
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JANUARY 1918

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CL Suðmann

Oh! in that dying year hath been
The sum of all since time began,
The birth and death, the joy and pain
Of Nature and of Man . . .

—Whittier

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A Magazine of Motor Interest

E.T. Strong Managing Editor

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Volume Six

Flint, Michigan, U. S. A.

Number One

THE SPOOK ROUND-UP

BEN LARKIN was busy repairing a break in one of his irrigating ditches. He was young and brawny and evidently

prosperous enough to be happy, nevertheless there was a look of extreme annoyance on his honest, sun-browned face. Presently a horseman came riding down the mountain trail toward him. His sombrero and large spurs, coupled with his reckless manner of riding, all combined to proclaim him a cow-puncher.

"Hello, Ben!" he called cordially, reining in by the edge of the alfalfa field.

"Good morning, Ike," said the young farmer, going up to the horse and stroking its mane.

For a minute, the cowboy's keen eyes surveyed his friend's face, then he burst out, "Crop's lookin' all right, fur as I kin see; then what you lookin' like you was superintendin' a graveyard fer?"

"Yes, the crop's all right," returned Ben, gloomily.

"Git out, then!" exclaimed Ike, striking his companion playfully with his whip. "You takin' salts, or has Nan Cullem bin doin' you mean? Gals and salts act 'bout the same on most fellers." Receiving no reply, he continued: "Look here, Ben; you and me's bin friends ever sence we was raised kids together up in them mountains, and if Ike Hutchins kin give you a lift any way he's goin' to do it right now. Out with it! If Nan's bin causin' you heart trouble I'll be the doctor and cure you. Sabe? Now tell Uncle Fuller yer troubles."

Ben was still silent.

"Won't the gal give in her decision on the affirmative side of the question?—'Cause if she don't, Ike's the judge and the jury to fetch in a favor'ble verdict."

"Nan would marry me today if it wasn't for her Uncle Lew," said Ben confidentially. "He opposes me."

"What has the old humbug got agin ye?"

"Nothing in particular, only he knows I don't approve of the frauds he practices. Besides, he doesn't want to lose the girl; he needs her in his business," with a sickly smile.

"Why don't the gal skip out and leave the old cheat-playin' devil?"

"You see, he is her legal guardian and she won't be of age for six months. Then you know they came here for his wife's health and Nan is too kindhearted to leave her," explained Ben.

"I see; Old Cullem finds it a payin' job to keep the gal and make her help in that spirit-rappin' racket," said the cowboy with contempt. "I wonder if she believes in his humbuggery—that he can bring up the spirits of dead folks?"

"No, she don't; but she won't say anything against it because he's her uncle; then that slick-tongued hypnotist, Darley, who helps Cullem with his fake business has the whole family under his influence."

"Maybe the gal likes Darley."

By Addison Howard Gibson

Illustrated by A. W. Grann



"No, I think not; indeed, I know when she is herself she can't bear him. But there are times when she can't throw off his control. She says he makes her sing at the meetings in spite of herself."

"Charmin' her like a snake does a bird, and after awhile I s'pose he'll be makin' her a med-jum, as they call the one the dead talks through. Ever go to their meetin's, Ben?"

"Once; but the ghosts wouldn't perform. Darley said some one present had too much of the evil spirit and frightened the good ones away."

"Darley's the biggest evil spirit hisself in Californy. I went one night and saw him do some of his hypnotizin'; then he helped Cullem to raise the dead—or pretend to. The old man went off into a sleep, and purty soon there was rappin's on the table and it begun

buckin' like a spunky broncho. Darley got the sperit of somebody's departed to sing back of the curtain they had up; but ye bet I wasn't swallerin' it whole like some of the folks there did.

"Now I ain't a-sayin' there ain't no sech thing as spooks, for I know there is. I seen one onct right in the trail when I was goin' to help elewate that hoss thief what wasn't the thief at all—that's how I wasn't there. But these here doin's of Cullem and Darley's is a swindle, and this old boy is goin' to expose the whole blamed fake. Now you got to come out and see me do it. They're arrangin' another spook round-up over there for Thursday night. We fellers is comin' down from the ranch to investigate, and you come right along with us."

Promising to be on hand at that time, Ben went back to his work while his visitor, calling out "Adios!" rode on toward town.

As Ben labored away at the ditch he occasionally glanced down the road that bordered one side of his alfalfa field, in the direction of a house which stood half surrounded by neglected fruit trees. Here he could see a slight girlish figure gathering peaches from the side of the orchard nearest him. He knew it was Nan, and a light of joy came into his eyes. The expression, however, was soon changed to one of deep annoyance as he saw a slender, trimly-attired man come out of the house and join her.

"Darley!" he ejaculated; "I'd ought to go down there and punch that oil-scented pate of his!"

About a year before this the Cullems had rented a large vacant house on the outskirts of a town in the fruit belt of Southern California.

Cullem had settled there on account of his wife's health, and only a few months later, Darley, a much-advertised hypnotist and so-called "medium" from the East had put in an appearance. He had known the family in Chicago and after coming West persuaded Cullem to resume their former business of giving exhibitions in hypnotism and spiritualism tri-weekly at the house. Darley also formed a class in town and taught some of the occult sciences of which he claimed to be master. The two soon managed to work up considerable curiosity in regard to their exhibitions and were not long in getting a number of followers.

Sometimes Nan sang at these meetings in a clear, sweet voice that seemed to exert a strange, quieting influence over the audience. Darley declared it "coaxed the spirits" and also gave added power to the medium. But the girl's part was very distasteful to her. She both feared and distrusted the man, and shrank from doing anything before the public. Still, rather than get into trouble with her uncle by refusing, and excite her aunt who was in a very

nervous condition, the girl reluctantly complied with their wishes. Young Larkin's farm joined the Cullem place. He had met Nan on different occasions, and learned to love her, and his love was returned. She had first seen Ben at a little picnic up in Rubio Canon soon after her arrival. When the young man told his love in his characteristic, outspoken way, Nan had listened, thrilled and happy.

At first the uncle was disposed to look favorably upon the young farmer's suit, but Darley's influence had been brought to bear against it. As an excuse Cullem said his niece was too young for marriage. Ben had offered to wait, but her guardian refused to give the least encouragement, and as time went on, matters seemed to grow worse instead of better.

Thursday night came, and accompanied by Ike and two of his cowboy friends, Ben went over to Cullem's. Each paid his fifty cents at the door and was admitted to the sitting room, which was dimly lighted by a small kerosene lamp placed on a stand in one corner. Nan, looking very sweet and winsome in a soft cream-colored gown with deep red carnations in a simple belt of white ribbon, modestly placed chairs for them. A white curtain was stretched across one corner of the apartment, thus forming a triangular closet. They were seated so as to face this enclosure.

A number of other persons were present, mostly women, some of whom were whispering to their neighbors of the wonderful things they had seen and heard at the last Darley-Cullem seance.

Ike overheard one of these credulous ones speaking in awed tones:

"A sperit in white ariz from the floor and done mighty cur'ous actin's at Mr. Darley's biddin', then all of a sudden it went right kerplunk through the boards of the floorin' in this very room, then disappeared. Mr. Darley give out that it was sure to appear again tonight; that's what brought me out," she confided to her listener. Just then Cullem arose and said in his metallic voice:

"We are now about to begin. The utmost quiet must prevail to obtain results. 'Nan,' addressing his ward, "turn the light down lower—lower still—there!" Then, turning to the people, "The spirits like silence and the hush of darkness. Some doubters may be present," he went on, eyeing the cowboy trio suspiciously, "but we purpose to convince even them that there is a reality in our demonstrations. We have been called 'cheats', 'fakes' and 'humbugs,' but I'll agree to give anything any one present may demand, if you can detect the least fraud in our exhibition tonight."

"Give us yer paw on that proposition, old man," said Ike, striding toward the curtain near which Cullem was standing. "I'm open, like a clam, to conviction, but I'm from Missouri and has got to be showed. Shake on it, old feller, and if you're not trickin' us I'll stand treat for the crowd—lemonade for the women and what you please for the rest. But if I find you foolin' 'bout this sperit round-up, and discover any suspic'us-lookin' spooks runnin' loose 'round here without the genwine brand of the true Happy Huntin' Ground a-showin' on 'em, I'll nab 'em, and expect you to make your word good. You promise?"

"Yes, certainly! I do promise!" replied Cullem, frowning, but showing a brave front.

The cowboy gripped his hand and then went back to his seat.

"Say, Ike, you sure you're acquainted with that brand you mentioned to old Spookers?" asked Big-Hoof Clark, his chum, with a suppressed chuckle.

"That's all right, you bet! Nobody can't trick me on that brand nor any other!" and he gave his teasing pal a slap on the thigh that sounded like a miniature thunderclap.

Cullem then took a seat near the curtain while Darley gave a short discourse on hypnotism and spiritualism. When he was through a four-legged table was placed in front of the curtain and Ike, Ben, Nan and two other ladies present were invited to seat themselves around it.

As they sat in silence, with their hands spread out upon the table, strange rappings could be

not Bill at this round-up. He's no ballet kicker! He passed in his checks 'fore tangoin' come 'round."

"Hush!" cried Darley irritably. "Let us have absolute silence."

After a little the form began to droop as it neared the curtain. Then it sank to the floor. Every eye was strained to see it vanish through the flooring. All at once there was a scuffle under the table and Ike's voice rang out:

"No you don't, honey! None o' that! I've got my number 'levens on that trap-door and you can't crawl through without gittin' splinters!"

Darley emitted an oath, rushed to the corner of the room and extinguished the light. Then he sprang toward the table. Instantly all was confusion. As Big-Hoof declared afterwards:

"There was sure noise enough to scare every spook off the range; and the way Old Spooker got out of that trance of his'n was a caution."

One of the cowboys struck a light, which revealed a strange scene. The table was overturned and women were holding their skirts down as though they apprehended an attack of mice. Ike Hutchins was standing with his legs spread across a partly opened trap-door, wedged between which and the floor was a wild-eyed woman in white trying frantically to extricate herself from the grip of the cowboy's powerful arms.

Darley, with a dark scowl on his handsome face, was exerting all his strength to free the woman. Cullem stood holding an end of the curtain, an expression of mingled rage and mortification on his countenance. Ben and Nan were together, her hand in his.

"Well," proclaimed Ike, as the woman gave up struggling and permitted him to place her in a chair, "the whole thing's a fake and Ike Hutchins is chief of the exposin' committee this time. Darley has locoed a good many by his sperit round-ups, but he's flunked tonight by the cowpunchers, you bet! This woman is his wife, kept in the cellar nights so she won't meet company. She comes down on the trolley from Los, where Darley keeps her, to do the spook stunt. I seen her arrive this evenin',

an' his humbug nibs met her on the sly. I was watchin' an' seen the whole purceedin'.

"A friend of mine knowed 'em in 'Frisco and put me wise. There's a trap-door here under the table, fixed fer Mrs. Spook to perform her part. I used to room in this here house, so I know somethin' 'bout its conveniences.

"I've bin inquiren' into the doin's here, and made up my mind to stop this humbuggin' of my feller citizens. There may be somethin' in sperits—I think there is—but Darley's kind is composed mostly of flesh and blood and the devil; so you folks better keep yer optics peeled fer him and her kind of sperits.

"It's jest a spondulix-makin' scheme with him, and Cullem has bin roped in agin his better idees.—Now, Boss," to Cullem, "the fraud's proved and Ike Hutchins calls yer hand."

Cullem looked fearfully around, but was too disconcerted for speech. So Ike went on:

"You let Nan marry Ben, and you can sort o' redeem yourself in the public's optics by helpin' him do honest work on his farm. Darley, you git out!"

And Darley "got." The rest of the program was carried out, even as Ike Hutchins commanded, and spooks permanently disappeared from that community.



"I've bin inquiren' into the doin's here, and made up my mind to stop this humbuggin' of my feller citizens"

heard on the floor and from the inclosed space.

Presently the soft, weird strains of a harp floated about the room. The music seemed to be first in one place and then in another. Then the table began to rock backward and forward.

"Whoa, there!" yelled Ike, as it again tilted higher. "That's the sperit of Bill Begins who died with his boots on over at Yuma. He's settin' astride of this table, imaginin' it's a broncho, and he's spurrin' her in the off flank!—Good fer ye, Bill! Spur her agin! We'll stay by ye!"

"Silence!" commanded Darley. "We cannot continue if you are going to talk."

After quiet was restored the music began again, low, vague and far away at first, as if uncertain whether to approach or not; but gaining courage it came nearer, played a few moments, then ceased. The table, however, refused to perform as a spurred broncho again.

Meanwhile Cullem had gone into a trance-like state. The hypnotist stood over him, making passes with his hands and muttering a few words to himself. Then suddenly, from some unseen quarter, a figure in white appeared and commenced whirling around the room, but keeping at a distance from the audience.

"Great sooks!" burst from Ike. "That's

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

IT IS an excellent thing for the individual to hold the mirror up before himself occasionally and inquire into what manner of man he really is. And for an industry, because it is a human institution, the practice is of equal benefit.

Motor car manufacturers and dealers in general should welcome the investigation of the federal advisory committee into the true status of the motor car as a modern necessity, because this investigation will be conducted in so thorough a manner as to leave no room for doubt in the mind of the least informed person. In this case the effect will be the same as if the investigation had been conducted by the motor car manufacturers themselves, and will have even greater weight because the information will come from an eminently reliable and unprejudiced source.

Our country is engaged in an undertaking that calls not only for the best efforts of every true citizen, but for the utilizing of every business weapon that can in any way facilitate the great work in hand. Behind the army in the field is a still more numerous and powerful army of workers—producers—who provide the thews and sinews of war as well as of peace.

The machinery of war has already gathered unprecedented momentum and is beginning to turn out its products like a vast factory. It is an inspiring thing because of its magnitude and because of the manner in which the modern way of doing things has been applied to it.

TRANSPORTATION is playing a very important part in the mobilizing of the units of this industrial war machine and will have a still greater part in the future. Because it is necessary, in order to provide the funds and the materials for war purposes, to keep business on as even a keel as possible in spite of the additional work incident to getting the army and navy on a full war footing.

This means a general speeding up all along the line. It means that the producer must be a still bigger producer. It means that the average business man must divide his energies in such a manner as to contribute everything necessary to the needs of the war department, and after that to hammer away at his regular business to keep it as nearly normal as possible.

This is the clear duty of all of us who remain on this side of the water—to speed up, not with the haste that makes for waste, but by using every possible means at hand to make ourselves more efficient and more productive.

We in the motor industry are concerned with the question of transportation, which is a most vital question and will remain so. But we deal with the transportation of men rather than

of materials. Our job is to shorten the distance between business places—to shorten the time that it takes the business man to deal with an outside connection, in order to give him more productive time in his own establishment. Our job is to lighten passenger travel on local and interurban trains, to make way for the moving of freight and the transporting of soldiers.

FOR time is the big element the government has to contend with in the prosecution of this gigantic undertaking. Wonders have already been accomplished in changing our nation from a peace to a war footing, but the things that have been done will pale into insignificance beside what the next year will bring forth. As we gather headway and the good work of the past months begins to assert itself more strongly, the element of time will be of still greater importance than it now is, and the ingenuity that characterizes Americans will be tested as never before in the battle with time.

There is not, and never has been any question about the ability of America to throw enough resources into the war to turn the balance in favor of the Allies. The only question is whether we can do it quickly enough to bring affairs to a speedy conclusion.

This part of the war is up to American business and the efficiency with which we who are not "over there" do our part.

The motor car has already contributed largely to American industry in the saving of time, and is rapidly being adapted to the present needs of efficient haste. We find it everywhere—in the transportation of army and naval officers—in Red Cross work—in relieving the congestion of street cars—in facilitating the transaction of the business of building war materials.

The industry has also been drawn upon by government officials for men of experience and ability, not only in transportation problems but in the actual designing and building of motor equipment for war purposes. For in making motor cars more and more efficient and economical, great strides have been made in the development of materials ideally suited to the demands of lightness and strength. Out of this experience has come the Liberty motor for aeroplane use—a genuine tribute to the motor car industry.

Automobile builders have also been responsible for the intelligent application of progression methods to building products both uniformly and economically, and these methods are also being applied to building war materials of all kinds with the utmost satisfaction.

SO THE influence of the motor car is more far-reaching than would first appear, because in a sense the automobile industry has been up against an almost parallel necessity to

war conditions for a good many years. This necessity was and is building a complicated machine, subject to constant strain and use, in large quantities and in such a manner as to render dependable service economically.

Buick dealers and distributors have an equal opportunity to serve. While the things they can do may not be applied to the actual manufacture or sale of materials for the army and navy, there is a wonderful chance for them to assist in the saving of time for business men and enabling them to inject more efficiency into their business, as described above.

We must not become bewildered by the unusual activity that surrounds us, nor relax our efforts because it is in some respect foreign to what we are accustomed to. Every one of us should be busier than we ever were before in our lives, because there is so much more to do.

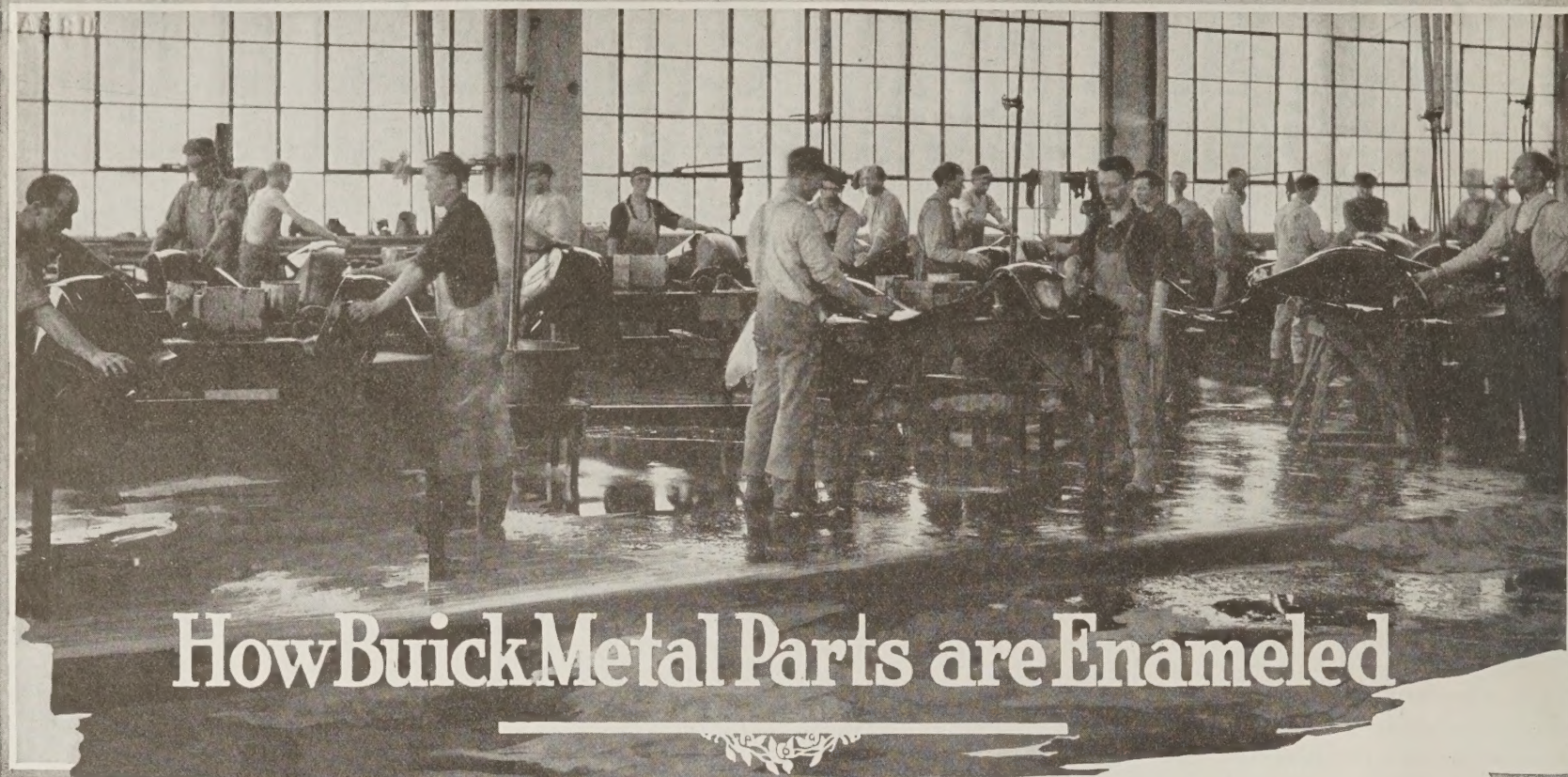
The first and most important thing is to get the right angle—to see where we can serve, and then to get everlastingly busy. There is a bigger field for used cars than at any previous time, because of the shortage of motor trucks. Convert them into light delivery cars or overhaul them for equally important service. New cars will be needed for business and professional men, for salesmen, for farmers, for everybody who needs to save time on short or long trips. Now is the time for the dealer to dig right in and apply Buick dependability and service to the present condition.

BUICK cars have been built for a great many years along lines that could not fail to develop maximum efficiency and prolonged usefulness. These are the demands that business makes on a motor car, and particularly now that the watchword everywhere is action swift and sure.

Buick usefulness is not confined to any one kind of business. There is scarcely any modern business that cannot be benefited by the services of reliable motor cars, from the standpoint of satisfactory and profitable results.

A great portion of the world's gold supply is now in this country. It is here to be used, which means that it must be diverted through business channels in the most effective manner.

Our country must take advantage of every resource she possesses to accomplish her aims completely and speedily. The motor car is an economic necessity and has long since passed through the trial stages that every great invention must endure before receiving the O. K. of popular opinion. The war will teach the American people more about efficiency than they ever knew before, and the automobile will play its part in a manner that will have a beneficial effect on all business when the war is a thing of the past.



How Buick Metal Parts are Enameled

THE lustrous enameled finish on the metal parts of Buick cars serves a double purpose. It harmonizes pleasingly with the finely painted bodies and the general trim appearance of the cars themselves, and at the same time affords a perfect and lasting protection for the parts that are most exposed to mud and water and other corroding influences.

Enameling is not in any sense a painting operation. It is a separate and distinct process that requires the greatest care and experience if the best results are to be secured. It also requires the use of specially made equipment, including baking ovens that can be regulated perfectly at high temperatures, means for providing unusual cleanliness and apparatus for handling the different kinds of parts in an effective way.

The parts, as they arrive in the Buick enameling department, are covered with grease to prevent corrosion while the manufacturing operations are being completed. In this condition they pick up a certain amount of grit and dust which would be fatal to either a fine or a lasting finish.

The Washing Machine

THE first operation is to give them a bath—not a haphazard lick and a promise, but a thorough, painstaking cleansing that removes every trace of grease and dirt. This operation is performed in a big mechanical washing machine, filled with boiling water and the best washing compound the Buick experts have been able to find. Any parts that come to the enameling department showing traces of corrosion are dipped in acid before going into the washing machine.

The parts emerge from the washing machine piping hot, and after draining are rubbed with emery cloth to furnish a "tooth" for the enamel to adhere to as well as to remove all rough spots. The workmen then wipe them off with prepared cloths and blow streams of compressed air into all seams, to insure the perfect removal of all dust resulting from the sanding operation.

The parts are now ready for the first, or ground coat.

In a production so large as that of the Buick factory, the handling of a sufficient amount of enamel efficiently and economically, presents quite a problem. This has been solved very satisfactorily by the Buick method. The enamel

is pumped into a large storage tank, from which it flows by gravity to each of the twenty-one dipping tanks throughout the several floors of the building. The consistency of the enamel before applying is quite essential, in fact, the quality of the finished work is very largely dependent upon it. In the Buick factory, this is governed from the big storage tank, which is carefully watched and the contents kept perfectly uniform at all times. Several times during each day the contents of the twenty-one dipping tanks, holding 450 gallons each, are drawn back into a large central tank and run through a centrifugal clarifying machine which, as its name indicates, removes any particles that may have dropped into the enamel from the parts or from the air. As an added precaution, the enamel is then run through a very fine screen. After clarification it is again pumped into the storage tank and drawn into the dipping tanks as required.

This method gives centralized control over the quality of the enamel in every dipping tank, instead of leaving it to the varying judgment of a number of individuals. To properly take care of Buick production it is necessary to keep 5000 gallons of enamel in circulation at all times.

Air Washed and Warmed

THE air in the dipping rooms and drying rooms is also an important item in the enameling process. It must be absolutely free from dust and of just the right temperature, so the enamel will not set too fast or too slowly. So in the Buick plant there is an air conditioning machine that draws fresh air from outside through a solid spray of water and washes it perfectly clean. During this process it also

passes over a heated radiator and the temperature is regulated, when it is forced through a series of pipes into the various rooms, clean and warm. The air machine is kept under lock and key to prevent any tampering with it and one of the officials is held responsible for its operation at all times.

So the scrupulously clean parts, mounted on floor trucks, are conveyed into this thoroughly clean atmosphere and immersed in the dipping tanks of carefully prepared enamel. The surplus enamel is then drained off and the parts hung on specially prepared hooks, one kind for each part, to insure the proper flow of the enamel while suspended over the drip tanks. This apparently simple process is really a critical one, because it governs the evenness with which the enamel is distributed over the parts and prevents it from gathering into large drops, or "tears."

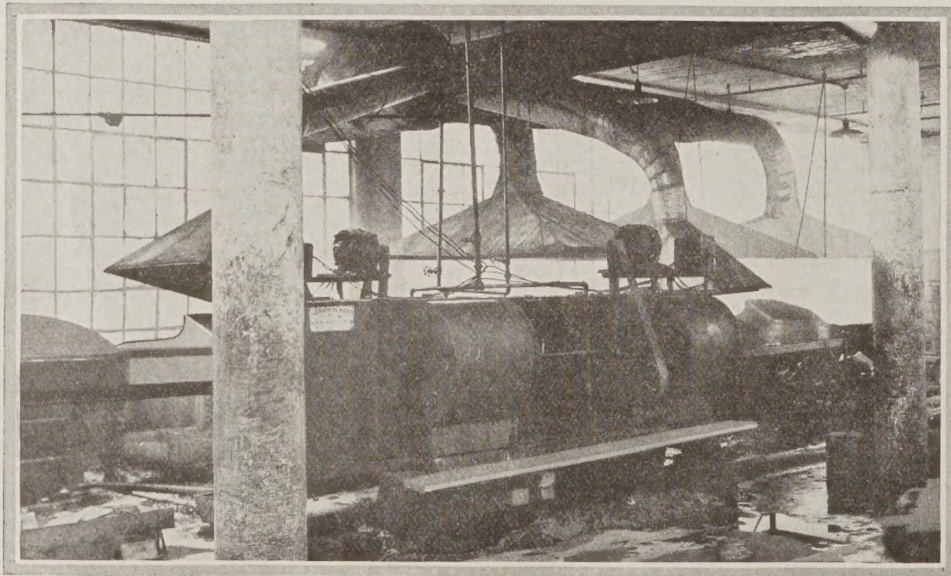
The first coat is called the "ground coat" and forms the basis for the coats that follow. After draining and setting the parts are hung on the conveyer that takes them into the baking ovens, still on the proper hooks.

Conveyers and Ovens

THE Buick conveyer is patterned along the lines of the mechanical conveyers used in the other factory departments, but modified to meet the particular requirements of the enameling department. An immense truck on wheels forms the foundation for a series of uprights supporting cross pieces of steel tubing, from which the parts are suspended by means of the special hooks. The trucks move on stationary tracks running right through the ovens and out to an equal distance on either side, the ovens being fitted with wide doors at either end.

When loaded, the conveyer is operated by simply throwing a lever.

The ovens are heated by gas burners, entirely enclosed to prevent the fumes from getting into the ovens and spoiling the luster of the enamel. The time required for baking on the enamel, and for drying the enamel before baking, varies according to the size of the part. As a general rule, the smaller the part the less time required to properly flow the enamel over it or to bake it on. Long experience has given the Buick experts the necessary knowledge to handle these operations to the best advantage, so that when completed, Buick enameled parts are done in a manner that



This washing machine removes all grease and grit

Two of the Buick enameling ovens open, showing conveyers inside loaded with parts for baking



View in the dipping room, showing tanks covered to protect enamel between dipping operations

guarantees lasting finish. The nature of enamel is such that it may be subjected to a high temperature during the baking operations, which gives it the hardness that makes for long service. Buick fenders and other enameled parts retain their brilliancy for years if kept clean and are not affected by atmospheric conditions or exposure. And naturally the temperature at which the parts should be baked must be carefully determined and maintained, so that the finished job will be neither tacky nor brittle.

Each Buick enameling oven is fitted with a pyrometer control to govern the heat all during the baking, and in addition has an indicator on the outside that shows the temperature and the length of time the parts have been in the ovens. The dials on these indicators keep the records for an entire day, when the records are removed and filed for reference.

The Ground Coat

THE Buick ovens and dipping tanks are so arranged that the parts progress through the different operations with the minimum amount of handling. The conveyer that takes them into the ovens from one side also takes them out on the other, where they are removed from the hooks after the ground coat is baked, and carefully inspected. This first coat reveals any dents or imperfections that may exist in the surface of the metal, and at this point the dents are removed by the "bumpers," who are wonderfully skillful at this work.

After smoothing out the dents, if any, the parts are passed to the rubbers—muscular men with great bare arms, who rub the ground coat down with a fine abrasive material to prepare the parts for the coats that follow. The dust from rubbing is then removed by workmen with prepared cloths called "tacky rags."

During these operations the parts have not left the progressive line, but have simply been passed to one side, convenient to the conveyer. The next dipping and drying then follows and

the parts are hung from hooks on the second section of the conveyer and run back into the ovens again, without any lost motion whatever. The ovens are arranged in a long row, side by side, and the conveyers carry the parts back and forth in a zigzag line until all the enameling operations have been completed.

This method of progressive handling is followed throughout every department of the Buick factory, because it not only insures that each individual part is handled in exactly the same way as the rest, but also that the greatest accuracy and economy are secured in manufacture. In a smaller factory, the progressive system might not be so essential; but in a factory the size of the Buick Motor Company, where hundreds of automobiles are built in a day and hundreds of thousands of parts must be handled by the workmen every day, it occupies a position of great importance to the buyer as well as to the manufacturer.

Final Coats

THE coats that follow the ground coat differ very little from it, except that the parts are seen to shine with greater brilliancy after each coat, and acquire a depth of finish that can only be found in high grade work. The method of dipping and draining off the enamel insures perfectly even application of the different coats and eliminates the possibility of brush marks, while the successive dippings and bakings insure that when finished the enamel covering is bound together into a solid shell, impervious to water or any other conditions encountered in driving in all kinds of weather.

It will be seen that in the Buick method of applying enamel, nothing is left to chance or to the judgment of men who are not thoroughly responsible. None but experienced men are employed, but even so, the temperature of the air, the drying conditions, the temperature in the ovens and the condition of the enamel are taken care of so that the workmen can make no mistakes.

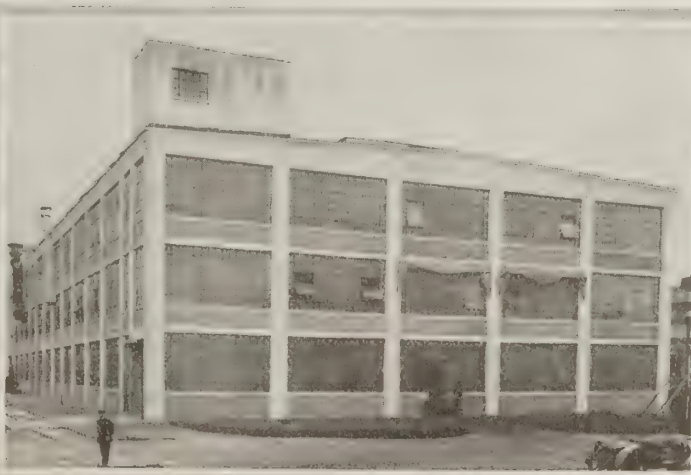
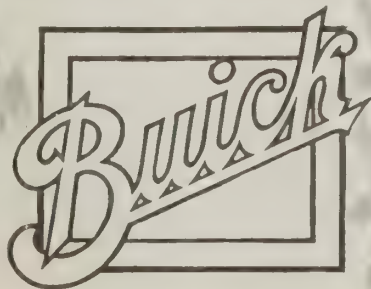
The inspection system in the enameling department is carried out in a very thorough manner. If any piece is found to be defective at any stage of the process, it is sent back to be rubbed down or discarded entirely.

A thorough inspection follows the final coat to discover any irregularities that might exist in the quality or the surface of the enamel coating. Any parts that are found wanting are sent back to the rubbers and polished with pumice stone and water, after which they are again put through the conveyer system and re-enameled.

Years Spent on System

THERE are twenty-nine enameling ovens in the Buick factory, which are capable of taking care of the thousands of Buick parts that pass through the enameling departments daily. These parts consist of fenders, radiator shells, hoods, dust aprons and many smaller parts. The system has been perfected to such an extent that all parts are handled in a perfectly regular manner and receive the treatment that is best suited to each. Too much stress cannot be laid on the material and the method used in enameling Buick parts. They are the result of years of study and a great deal of money and time have been spent on bringing them up to their present efficiency.

Enameled parts are very easy to keep clean and more than repay the small amount of effort required to keep them so. Mud should not be allowed to cake on them and when soap is used in washing it should be thoroughly rinsed off. Even when neglected until the enamel takes on a dull appearance, it is surprising how the brightness can be restored by a good washing. The sparing use of a good body polish will help to preserve it. The durability of the enamel finish and the fact that it seldom chips off even when the metal itself is dented by a blow, makes it the ideal finish for the more exposed parts of a car when applied under the proper conditions.



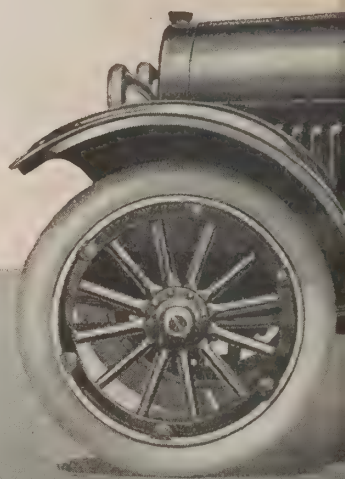
The big Buick Enameling Plant

Everybody Knows
Valve-in-Head
Means Buick

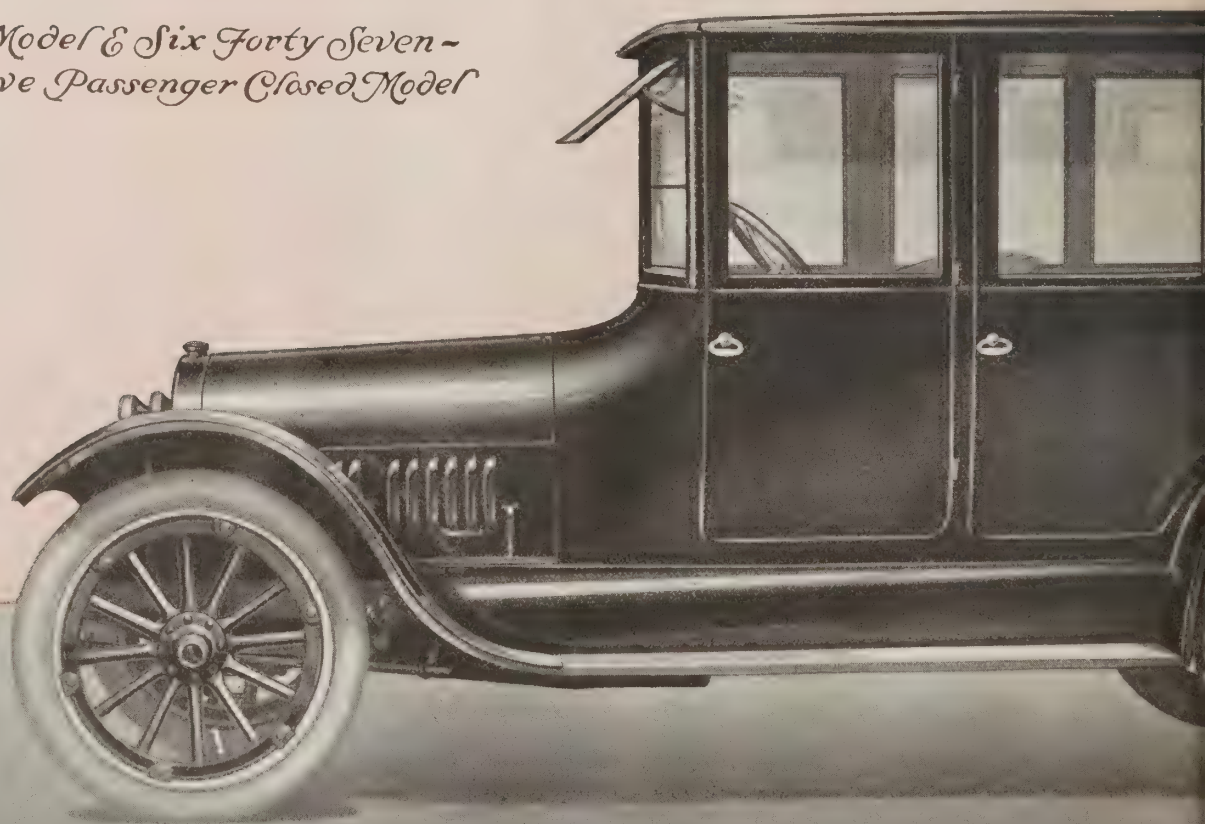
In this new Buick there has been combined the convenience of a practical, moderate priced closed car with the surplus power and economy of the Buick Valve-in-Head Motor.

It is a convenient car for all business purposes, with a completeness and refinement that makes it suitable for all occasions where a closed car is required.

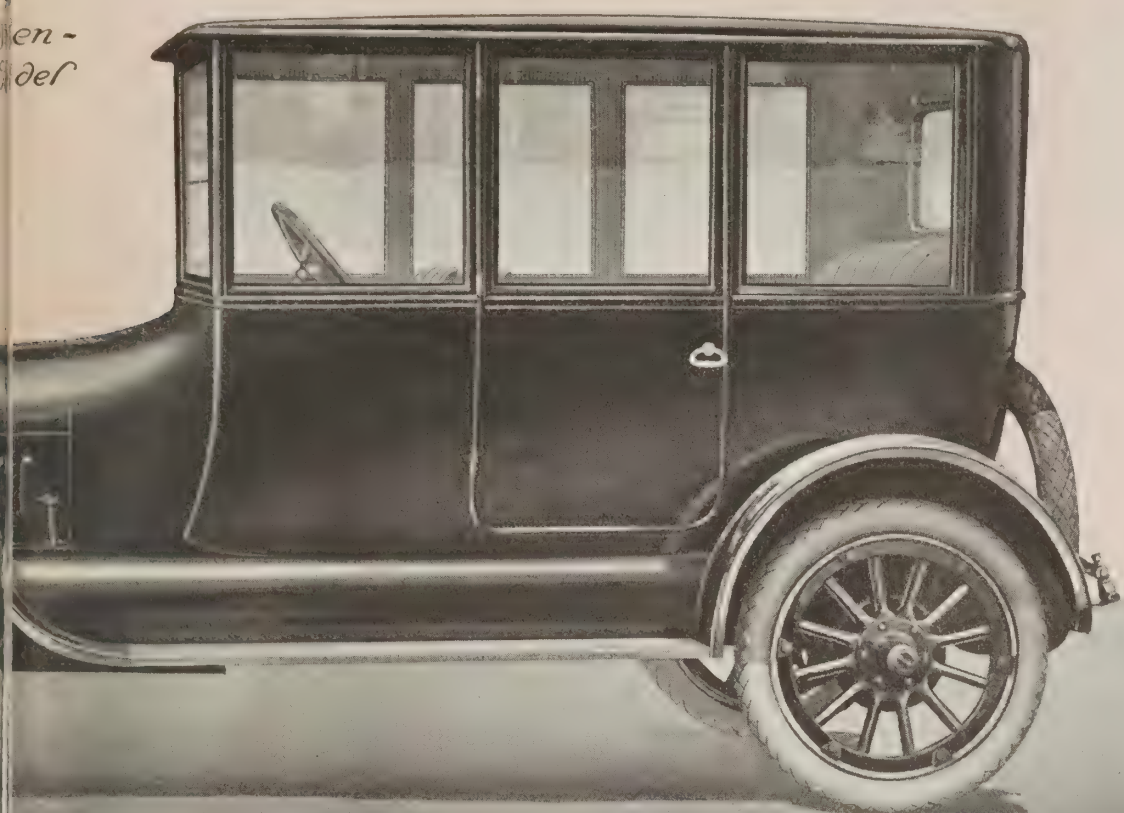
*Model E Four Thirty
Five Passenger Closed*



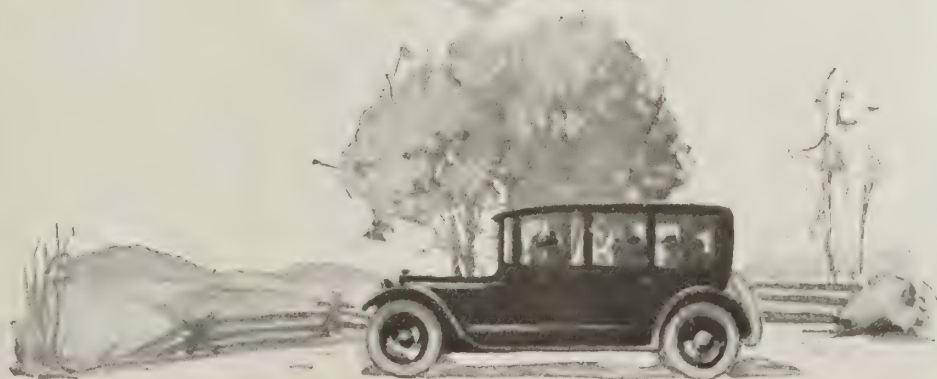
*Model E Six Forty Seven -
Five Passenger Closed Model*



en -
del



This new Buick Four-Door Sedan meets the demands of those whose motor car requirements call for its continuous use regardless of the weather. It is a Buick Valve-in-Head, substantially built, and has a refined appearance both inside and out that makes it very desirable for use at all times where a closed car is required.





Massillon Medical Men Unite



"The D-Six-45 cannot be beaten for easy and comfortable riding."—S. Hattery, M. D.



"My car always goes and comes back, and sometimes helps a friend get home."—O. D. Bashford, V. S.



"After 18,000 miles I will not trade for fear they cannot make 'em as good as this one is."—B. W. Groff, V. S.



"I am certainly set for life on this Buick product."—C. P. Wolf, M. D.



"A freight engine separated me from my Buick last week, but I am still with the family and expect my new E-Six-50 in a few days."—C. E. James, M. D.



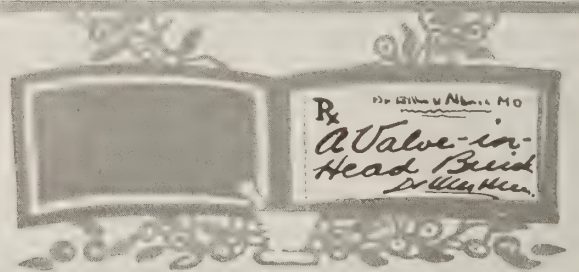
"I bought this car because it was giving real service to the other doctors and my car has certainly made good."—B. J. Miller, M. D.

EVERYBODY knows in a general way that the busy practitioner is dependent to a great extent upon the motor car, both in his daily routine and in sudden emergency calls. Frequently the matter of a few minutes will turn the scales in favor of life or death, so that a quick, sure means of transportation is necessary to physicians.

The city of Massillon, Ohio, offers one of the best illustrations that has come to our attention of the extent to which the motor car is used by physicians throughout the country. Massillon has a population of 15,000 people and there are approximately 8,000 people in the territory around Massillon with which this article deals. In this territory are twenty-four doctors, eighteen of whom drive Buick cars daily.

Photographs of thirteen of these doctors are shown on this page, together with some brief statements from them as to the satisfaction Buick cars are giving in this day and night service. In addition to these should be mentioned the names of five others, whose photographs it was impossible to obtain. Drs. George and John Snively were too far away to be reached; Drs. J. J. South and M. L. Bayliss are serving their country in Red Cross work with the army, and Dr. Maurice Smith was ill at the time, but not too ill to make the following statement: "I only regret that my illness prevents me from being with the car I am so proud of and which my business demands."

Dr. South recently wrote from France to a Massillon friend: "Say, Kelly, there are a wonderful lot of Buicks here, and every time I see one I think of my 'get-there' Buick roadster." Dr. Bayliss is equally enthusiastic, and says: "Since owning my Buick car I am convinced that the claims made for this product were in no wise exaggerated."



in Commending Buick Utility



C.W. WAGNER

THE motor car has done much for the medical fraternity. It has enlarged the day's work in a manner impossible before. For a physician must cover his territory, which is often scattered, and the less time he spends on the road the more time he has to spend with his patients. If the work is light he can do it quickly and get a breathing spell. If it is heavy he can still cover the field and perhaps save himself some precious hours of sleep.

The doctor has no choice of weather conditions. In fact, he is usually busiest when the weather is most inclement. The motor car saves him from exposure and affords him protection that the old-fashioned buggy could never give.

The old-time doctor used to bed his own horse, and pitch down hay from the loft by the aid of a lantern, and often hitch up under the same conditions. The modern physician steps into his car, presses the button and is off. When he returns, he slams the garage door.

But most of all, dependability is the feature that the physician demands in his motoring equipment. His time is too valuable and too many of his visits are urgent to permit of his taking any chances. And this is the reason that physicians favor the Buick car. It has a long record of achievement and a reputation built on nearly twenty years of consistent performance.

The Wagner Auto Garage Co., Buick dealers in Massillon, have made some interesting investigations into the use of motor cars by business men generally, and report that out of the 287 Buick cars in that territory, 210 are used almost exclusively for business purposes during business hours.

Among these cars may be mentioned those in the service of the City Service Director, the City Safety Director and the Fire Department.



"I have owned four Buicks in the past twelve years and unhesitatingly urge any physician in need of a car to pin his faith to the Buick product."—J. Frank Campbell, M. D.



"It is a car that inspires confidence from its first acquaintance and it makes good that impression in every test."—A. P. Gardner, M. D.



"I am now using my second Buick car and they have both given excellent satisfaction. If I should need a third one, it would again be a Buick."—A. H. Gans, M. D.



"I have always been a Buick enthusiast and my last 2500 mile tour has proven that my faith in the Buick was well placed."—F. M. Lose, M. D.



"The most satisfying feature to me is that my roadster means maximum time conservation. It is ready to run at all times and under all conditions."—W. H. Bell, M. D.



"I consider my Buick car just as essential a part of my equipment as my medical kit."—J. O. Gardner, M. D.



"About 20,000 miles and going perfectly yet. In addition to my driving in our locality, I have taken three tours each of about 2500 miles, and never had to use a tool on the car except for tire changes."—J. A. Taylor, M. D.



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Care of Oil and Gasoline Systems

CLEANLINESS in the gasoline and lubricating systems of a motor is a factor that has much to do with its smooth and efficient operation. This is a good rule at all times, and applies with double force in the cold weather. A few very simple operations occasionally will keep these systems perfectly clean and free from all foreign substances.

It is an excellent rule to drain off the oil in the crankcase every 500 miles and replace it with the very best grade of light motor oil obtainable. Oil loses its lubricating qualities faster during the cold weather than when it is warm, as shown by tests conducted by the N. A. C. C. This is due to the fact that when the motor is cold, a certain amount of the gasoline mixture on coming into contact with the cold cylinder walls is condensed and trickles down into the crankcase, thinning out the oil.

It may also happen that a small quantity of water or sediment will

collect in the bottom of the crankcase. This may be removed by taking out the drain plug in the bottom of the crankcase occasionally.

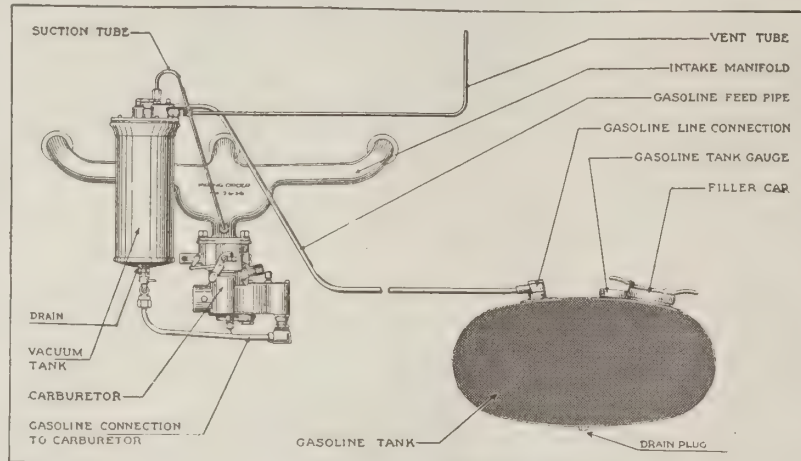
Whenever it is found advisable to drain the crankcase completely, as for changing the oil, it is well to rinse the crankcase out thoroughly with kerosene oil to clean it.

The drain plug on the bottom of the gasoline

tank should also be removed about every 500 miles, to remove any water or sediment that has been deposited from the gasoline. Otherwise this foreign matter will sooner or later be drawn into the gasoline lines and find its way to the vacuum tank and then to the carburetor. The Buick gasoline tank is designed to prevent this as far as possible, and if the water is drained off occasionally there is no danger of trouble from this source; the feed pipe does not go clear to the bottom and a small amount of water or sediment will not be sucked up.

For this same reason, a drain plug is placed in the bottom of the vacuum tank, which should be drained in the same manner about every 200 miles. The vacuum tank will catch any small quantity of foreign matter that may be drawn in through the feed pipe and can be quickly removed by means of the plug.

A few minutes spent occasionally in observing these simple rules will keep the lubricating and gasoline systems perfectly clean.



BUICKS GIVE LONG SERVICE AT SMALL COST

Not a Minute's Trouble

MR. J. P. VANDUZEE, superintendent of the Judson Orchard Farm, at Cairo, Ga., is very enthusiastic about his Buick Light Six, purchased from M. C. McManeus more than a year ago. He writes:

"We have driven her 7000 miles without putting her in the shop for repairs. The upkeep has been as follows:

Tires and repair on same.....	\$ 57.60
Repairs on speedometer.....	2.75
Grinding valves.....	1.25
Removing carbon (one time).....	3.00
Gasoline, 411 gal. at 25c.....	102.75
Oil, 10 gal. at 75c.....	7.50
Grease.....	.90
Repair on horn.....	1.50

\$177.25

"The above figures 2½c per mile. The tire item was caused by two blowouts, which was our fault, as we hit bad stones.

"This car has always been ready to go and we have never had a minute's trouble with her. Some record for the kind of roads we have in this section."

Still New After Many Months

MR. H. D. WILKERSON, commercial agent of the Norfolk & Western Railway Company at Pittsburg, is the owner of a Buick Model D-Six-45, purchased in April, 1916. Late in November of this year he received a letter from the Registrar of Motor Vehicles at Harrisburg, saying that it had been reported that Mr. Wilkerson was displaying his license plates on an entirely new car.

Mr. Wilkerson promptly wrote a letter of explanation to the registrar, the last paragraph of which read as follows:

"In concluding, please permit me to say that it is indeed gratifying to note that after having driven this car over 6,800 miles it is still in condition to pass your inspector as a new car.

"However, the explanation of this is that I have always looked after it personally and not allowed

any and everybody to wash, clean and take care of it, all of which goes to prove that if a Buick is given half a chance it will live up to expectations."

The Complete Buick Line for 1918

THE BUICK line for nineteen-
eighteen consists of nine different models, each with its peculiar field of usefulness. All are built in the Buick factories, are equipped with Buick Valve-in-Head motors, and with the wide range of body types and sizes afford the motorist unlimited latitude in selecting a car to fit his needs.

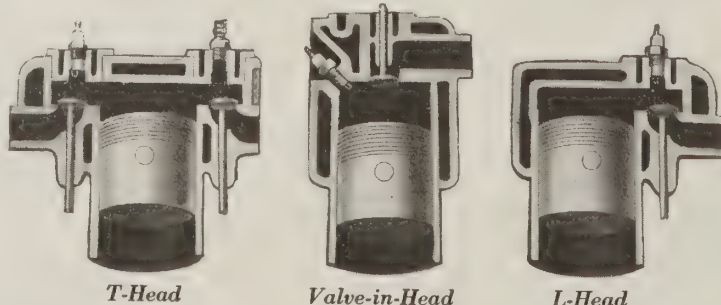
PRICES of BUICK CARS for 1918

Open Car Models

E-Six-49	7-passenger Open	\$1495
E-Six-45	5-passenger Open	1265
E-Four-35	5-passenger Open	795
E-Six-44	3-passenger Open	1265
E-Four-34	2-passenger Open	795

Closed Car Models

E-Six-50	7-passenger Closed	\$2175
E-Six-47	5-passenger Closed	1845
E-Six-46	3 or 4-passenger Closed	1695
E-Four-37	5-passenger Closed	1185



Because of its design, the Valve-in-Head motor has less water jacketed space than any other type of motor, which means that less heat is wasted through radiation and greater fuel economy results.

Southern Lady Buys Her Sixth Buick

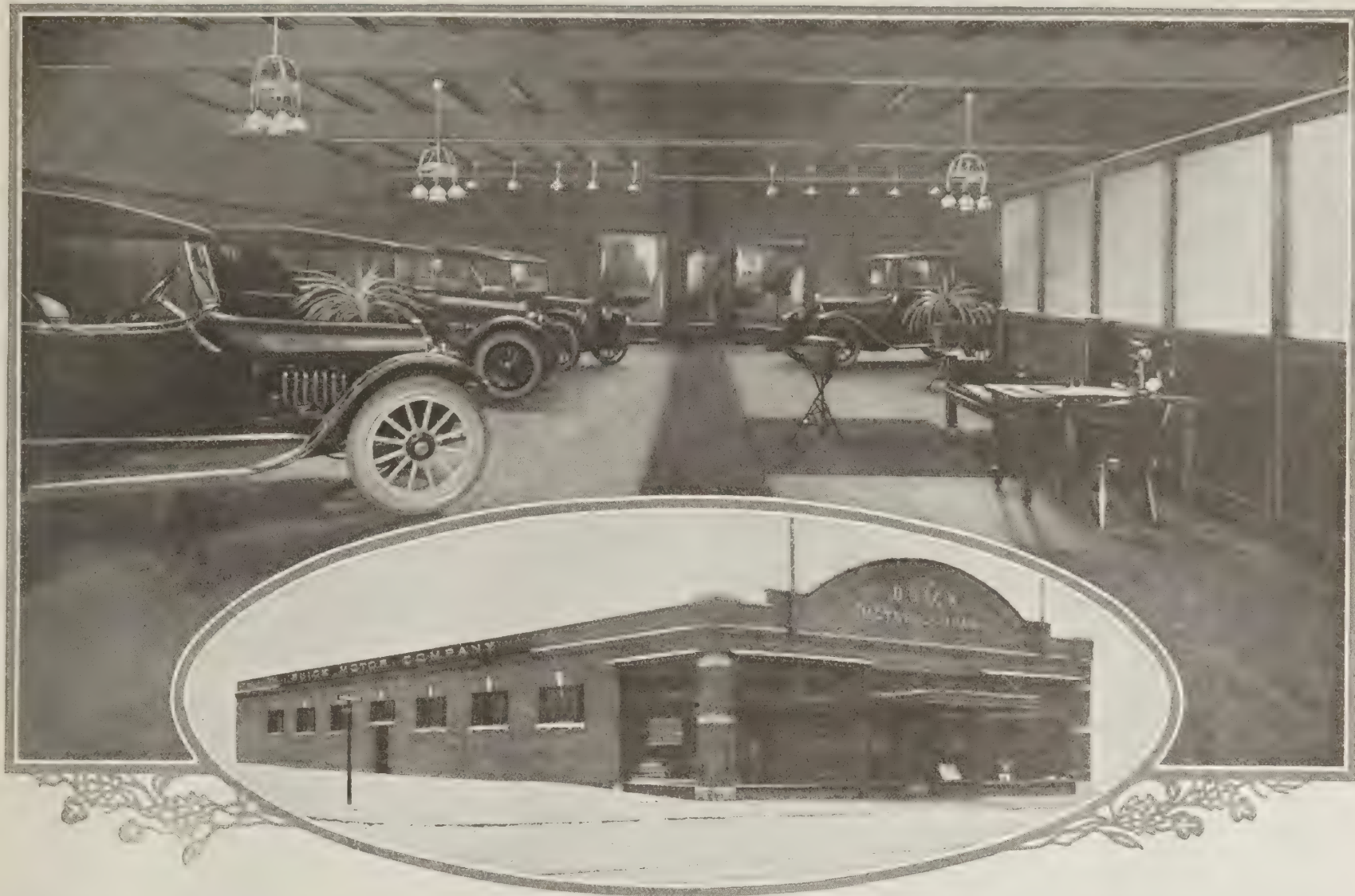
IN happiness," writes Miss M. Louise Lockwood, of Montgomery, Ala., "I am writing to tell you I have just received my new 1918 Buick. This is my sixth Buick since November, 1912. Previous to that I rode in the . . . car owned by the family and driven only by the men of the family. I wanted to drive and determined to find a car a lady could drive and be proud of. I had been to every show east of the Rockies and to many of the factories before I bought my first Buick in 1912.

"Last summer I took a party of friends to New York, Long Island, Connecticut and return via Atlantic City, Philadelphia, Washington, Baltimore. In Virginia they were making new roads over plowed ground. We came to a newly plowed red clay road up a long hill, just after a two days' rain. Men with mule teams were waiting to help everyone through, but we went 'over the top' unassisted, amid the shouts of many people in stalled cars and on foot. We averaged 20 miles to the gallon of gas on the trip and had not a minute's trouble."

Buick Excels In All Essentials

I HAVE owned my Buick Six Roadster nearly two months and driven it about 4000 miles," writes L. W. Roshamp, of Quincy, Ill. "I have driven quite a number of the other cars and have owned two other kinds, but have come back to the Buick to stay now. In my business as stock salesman I must have a car that excels in beauty and performance, stands the test on the country roads and bears close inspection in town society. Another advantage I find in owning a Buick car is the service one gets with it. I have met a number of dealers in this section of the country and with all of them it is 'service with a smile,' and service I think is one of the main points one should consider in buying a car. I have always been and shall continue to be strong for the Buick Valve-in-Head, and I thoroughly believe when better motor cars are built, Buick will build them."

The Buick Branch in Detroit



IT is fitting that the largest motor car manufacturer in the second automobile city should have proper representation in the first automobile city. The Buick Motor Company, of Flint, has that representation in the Buick Branch, at Detroit, which is an organization of unusual completeness and efficiency.

The headquarters of the Buick Branch are at 750 Woodward Avenue, where the wholesale end of the business is conducted and where there is a large showroom for the display of cars.

A large service station is operated in connection with the branch headquarters. This service station is located a few blocks away, at Cass and Willis Avenues. Cass Avenue is one of the main thoroughfares of the city and makes an excellent location for the convenience of owners.

In addition to these two establishments, three other sales and service depots are maintained, as follows: The Starkweather-Buick Sales Co., at 2845 East Grand Boulevard, with a service station at 17 Claremont Ave.; the Harley-Buick Sales Co., 1226 Hamilton Boulevard, and the Telotte-Buick Sales Co., 621 Woodward Avenue, with a service station on Winder Street. The three last named establishments are headed by men who have been taken from the Buick sales organization and are thoroughly familiar with Buick policies and methods.

It would be hard to find an organization that could cover the field more effectively or handle the territory in a more pleasing manner to Buick owners. Detroit is a large

city and it would be rather difficult to take care of all owners from the same establishment without some inconvenience. Under this arrangement the whole city is served with the least expenditure of time and effort, in the same manner that is followed by the Buick Motor Company in other large cities.

The large central service station at Cass and Willis Avenues occupies the entire second floor of the building shown in the picture. And while the Buick factory is less than 70 miles distant, the stock of parts carried in these bins is as large as that in other branches a thousand miles away. It should be borne in mind also that the Detroit territory is a comparatively small one, covering eight counties in Michigan, thirteen counties in Ohio and two in Indiana.

The man in charge of this station has been with the Buick Motor Company for a great many years and gives his personal attention to the supervision of the shop and the parts stock.

Detroit has excellent railroad facilities, as well as a perfect network of interurban lines, so that all points in the territory are easily reached and extremely quick service is given on repair parts. Each dealer throughout the territory maintains an adequate stock of repair parts, as in all other sections of the country, and these various stocks are replenished from the depot in Detroit, which also acts as a quick source of supply in emergency cases.

This is the same general method that is followed at all Buick branches. The Buick Motor Company is anxious to have its owners get the full benefit from their cars and eliminate delays in case repairs of any kind should be necessary. It is not always possible for local dealers to anticipate all demands that may be made upon their parts stock, particularly for the older models of Buick cars, and the backing of such a branch is a big benefit to owners and dealers from a service standpoint.

The general offices are located at the headquarters on Woodward Avenue, which has been fitted up for the accommodation of both owners and dealers. The large showroom contains several models of Buick cars at all times and is tastefully decorated with rugs and potted plants. Large plate glass windows extend along both the north and west sides of the building, affording plenty of light and room for effective window display.

Every phase of the business is thus covered admirably, with a large and efficient staff to do full justice to the interests of all concerned.



The Buick Central Service Station in Detroit occupies the entire second floor of this large building at Cass and Willis Avenues, operating in harmony with three other service depots in Detroit, as well as with the service departments of all dealers in the territory, particularly in the maintenance of complete stocks of parts.

Buick Dealers Far and Near



Newton Brothers have the finest automobile establishment in Emporia, Kansas. These dealers devote their entire time to the distribution of Buick cars and have fitted up their place of business with every convenience to take care of owners. In addition to an attractive showroom, they have a garage and shop that would do credit to a much larger city and are equipped to handle repairs and service work of any nature. Newton Brothers have handled Buick cars for the past ten years.



The Mortenson Motor Sales Co. are Buick dealers in Fairfax, Okla., their headquarters being in the fine building shown in the picture. The Fairfax territory is a comparatively small one, being about 12 miles wide by 18 miles long, so that an establishment of this character is a real tribute to the Buick car and the live Fairfax company. The shop is equipped with the very latest machinery and is capable of undertaking any kind of repair work on Buick cars.



Shanghai, with its coolies and celestials and its big foreign settlement, is a quaint combination of the old and the new. It is one of the "open doors" through which the silks and green tea find their way to the occident and by means of which foreign products are imported into China. This picture shows the Buick establishment in Shanghai—a modern structure with plenty of plate glass and good working facilities. Messrs. Honigsberg & Co. are to be congratulated on their fine place of business and their success in marketing Buick Valve-in-Head cars. This is another illustration of how perfectly the Buick car answers the requirements of different countries and climates.



The Buick is rapidly becoming the international car. This picture shows the Buick establishment in Batavia, Java, Janssen & Co., proprietors. Buick cars are giving excellent service in that far country and Janssen & Co. have broken in a number of natives to drive and work about the establishment. One of these natives may be seen at the wheel of the light delivery car.



Mr. W. G. Leavel is the proprietor of this new Buick establishment at Leavenworth, Kan., which is conceded to be the best building of the kind in Leavenworth. Mr. Leavel is a Buick dealer exclusively and has built up an excellent business in that territory through his well-directed efforts. In his new building Mr. Leavel will be in a position to take care of the interests of his owners more effectively than ever.



Buick

The preeminent position Buick cars hold in the esteem of the motoring public becomes more evident with each passing year. Each year brings further recognition of the correctness and superiority of the Buick Valve-in-Head principle of motor construction. Equally evident is the appreciation of the beautiful body lines, superb finish and fine appointments which characterize all Buicks, from the practical four-cylinder Roadster to the large six-cylinder enclosed cars. The big, roomy seven-passenger Touring Sedan illustrated above meets the needs of all the family, combining the comforts and advantages of both the open and the enclosed cars.

BUICK MOTOR COMPANY

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities
Dealers Everywhere

Main Office and Factory
FLINT, MICHIGAN

Buick



EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK

THE important part good automobiles are taking in promoting industrial activity and in furthering utilization of every resource is becoming more apparent each year and today the economic value of motor cars designed and constructed with the highest efficiency is a matter of general recognition.

The fact that 90% of all automobiles are purchased primarily for business uses, and that like the reaper, the tractor, the telephone, and the railroad, they contribute greatly to the productive ability of the individual, and therefore of the nation, is commonly realized. And quite naturally, farmers, manufacturers, salesmen, professional men and men in every line of business are exercising even stricter care in selecting the motor car that meets their requirements with greatest efficiency and economy.

That there is a nation-wide appreciation of Buick quality in every essential of design and construction is made increasingly evident by the demand for Buick cars in every field of motor car service.

Embodied in all the nine Buick models adapted to the varied needs of city, town and country is the famous Buick valve-in-head motor and many other recognized features of Buick manufacture which combine to assure efficient, reliable, economical performance under all conditions.

*In addition to the present complete line
additional enclosed cars will be announced
during the National Automobile shows.*

Buick Motor Company

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities: Dealers Everywhere

Main Office and Factory, Flint, Michigan

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THE *Buick* BULLETIN

Published by the Sales Department
of the Buick Motor Company

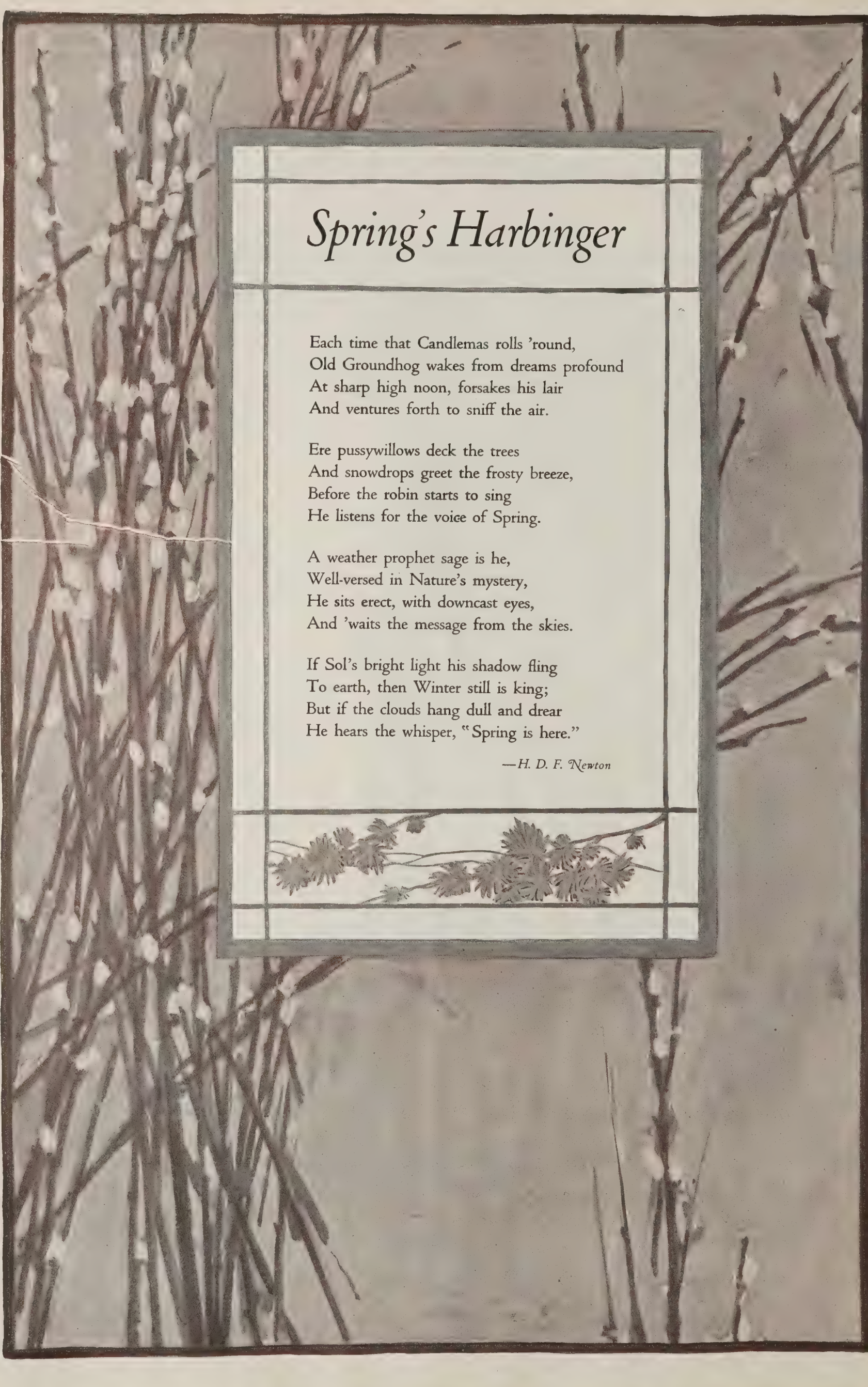
FEBRUARY 1918

FIVE CENTS A COPY



"Here to Stay"

In this number—"The House of the Vanished Host"



Spring's Harbinger

Each time that Candlemas rolls 'round,
Old Groundhog wakes from dreams profound
At sharp high noon, forsakes his lair
And ventures forth to sniff the air.

Ere pussywillows deck the trees
And snowdrops greet the frosty breeze,
Before the robin starts to sing
He listens for the voice of Spring.

A weather prophet sage is he,
Well-versed in Nature's mystery,
He sits erect, with downcast eyes,
And 'waits the message from the skies.

If Sol's bright light his shadow fling
To earth, then Winter still is king;
But if the clouds hang dull and drear
He hears the whisper, "Spring is here."

—H. D. F. Newton



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E.T. Strong Managing Editor

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Volume Six

Flint, Michigan, U. S. A.

Number Two

The House of the Vanished Host

DO you think he will ever return, Phoebe? This is one of my hopeful days, I know he will come, I feel it in every fibre of my body.

The wait of the last twenty-five years would have been short could I have felt always as I do tonight." The remark was made by a frail little woman of perhaps forty-five, with silvery gray hair, whose piercing brown eyes shone with an alertness born of watchful nights and anxious days.

She was sitting by an open fire in her bedroom; a little back, and in the shadow, sat the woman to whom she spoke, apparently a family servant, of some sixty years. Few words had been said by either of them during the evening; the comfort of one another's presence seemed the only thing required.

The room in which the two women sat was the boudoir of a woman of refinement, a quarter of a century ago. Here and there, a special touch showed the individuality of the occupant. On the dresser lay the usual feminine outlay of silver, decorated with an original design of iris. The bed, an exceedingly good old fourposter, was draped in French chintz of a quaint design, the subdued shades of which matched the covers of the furniture, and harmonized with the walls.

The night was a cold one. A storm had blown in from the lake about mid-afternoon. Instead of subsiding at sunset it had increased in fury, and now snow and sleet hurled themselves against the windows, their fury augmented by the moaning of the big pine trees which grew close to the old house.

It was a fine, pure type of Colonial architecture, red-brick, with columns across the front, supporting an over-shot gable. Ivy had clambered over the walls, covering all the windows, and the house now wore the air of having closed its eyes, intentionally, to shut out the world, while the kindly trees and shrubs had come to its aid and veiled it even more securely from the passersby.

For twenty-five years the house had been practically closed, at least as far as outward appearances were concerned. Inside, shut away from all the world, lived the two women, never coming out from their seclusion except as the servant came to buy food. No grocer's boy or milkman ever ventured within the gate. An old man, who had

By LUCIA OSBORNE BELL

Illustrated by J. Herbert Meier

worked about the place in its early days of prosperity, came occasionally to make repairs, and keep the path cut through the ever infringing shrubbery of summer, and the heavy snows of winter. By day there was no sign of occupancy discernible about the place; until twilight each evening, it seemed to sleep; then a bright light streamed from the rose-window, which was high up, on the landing of the stairs in the big hall, and down the path it shone, giving a warm, welcoming glow to the otherwise sombre surroundings.

The lamp, an old brass one, had just been lighted, and stood in its accustomed place, placidly throwing its beams into the blackness of the night, oblivious to the fact that the storm seemed to be hurling them back.

A mirror, in a quaint gilt frame, stood at the foot of the stairs; its polished surface, apparently forgetful of the present, seemed absorbed in the reflection of the past.

The scene was a strange one, the last that one would have expected the interior of that staid, old-fashioned house to reveal. Nothing but a large social affair could have left such traces, and for that cold, spiritless house to have ever countenanced such

gayety seemed incredible now. Things had been left, apparently, just as they were at the close of a joyous evening, when the guests had, for some unaccountable reason, made hurried departures. Part of the music on the piano had slipped down and caught on the stool and the chairs of the musicians had been pushed back in confusion.

About through the rooms were little spindle legged card tables, some with cards turned face up, and arranged in hands, as though the guests had laid them down for a moment, expecting to return. Against the dark paneling in the hall, were improvised trellises, but the roses had fallen, and lay in little forgetful heaps beneath. The old mirror stood patiently reflecting the scene, as it had every night since the Rose Fete, twenty-five years before; it pictured the sad things with the same faithful accuracy that it had reflected the gay doings in the joy-

ous days before. Suddenly, the flame of the old lamp on the landing flared high as though a draught had caught it, and above stairs, hinges unaccustomed to turning, creaked in their sockets.

There was the sound of slippared feet, and the rustle of a silk dress on the polished floor, then a soft voice spoke; there was an anxious note in it, "Phoebe, do come. I have heard it again; it is a child crying, I think. The draught has blown out the light."



"Did you hear it then, Phoebe?"

The servant appeared with a candle; taking it from her and holding it high over her head, the first speaker, a little lady in black silk, started down the stairs. At the landing she paused. "Did you hear it then, Phoebe?"

"Yes, a little noise—it is an owl, perhaps; at least no child is out in a storm the like of this. You did not find anything before when you hunted," replied the old servant, with a note of complaint in her voice which belied the look of adoration in her eyes.

"I know it," replied the other, "but this time I must." She paused as a blast of wind shook the whole house, then followed a cry, distinct to the ears of both women, and something heavy fell against the paneled outer door of the hall.

Scarcely waiting for the echo of the sound as it floated through the big, empty house, the little figure, brave as a warrior now, ran down the winding stairs, and setting the candle on one of the little tables, amid the dusty faces of the cards, drew the big bolts.

As the door swung wide, the body of a man fell heavily across the floor, and lay motionless. While the snow blew in, drifting over him, the light of the little candle flared high and disappeared.

In the darkness, with almost superhuman strength, the little woman bent forward and dragged the figure into the hall, forced the door to and bolted it, just as the servant came back bringing fresh lights.

Kneeling beside the figure of the prostrate man, the little woman in black brushed the snow aside, and then with a startled cry, mingling joy and fear, she bent and kissed him.

An hour later, in that same dimly lighted hall, stood the doctor, a man of perhaps fifty-five, his body almost exhausted by the fight with the wind and drifts, his mind alert with the many memories that the place awakened.

To be suddenly called to the Burton home, the interior of which no one in the town had seen for twenty-five years, and that at midnight, in the most fearful storm of the winter, led to a tension of nerve and acuteness of perception he had seldom experienced.

He shook the snow from his overcoat, tossed his fur cap down upon a leather chair near by, and pulling off his gloves, stood surveying the room. Everything was just as he with the other guests had left it, at that same hour nearly twenty-five years ago. He had been one of the last to leave, thinking that his services might be needed. Looking back, he remembered the evening affair had promised to be the prettiest ever given in the little old town, and certainly its close had been the most tragic.

The Burtons had come to Barrington only a year before and the reception was the first formal affair they had given. They were equally popular; Mr. Burton was frank and sincere, very much a gentleman, both in looks and manner, and had the reputation of being an excellent business man. Mrs. Burton had had advantages of study and travel beyond the average woman, and that added to much natural charm had made her, from the first, a great favorite with both the older and the younger set.

The tragic ending of the evening came back to the doctor now in pathetic vividness. He could hear again the stupid pause in the music, the halting notes, and then the final, jerky stop, as one musician after another heard fragments of conversation, exchanged by the guests, to the effect that an officer had presented a warrant for the arrest of their host.

He could see Mrs. Burton, young and charm-

ing, holding a quiet conversation apart, with the young officer. He, frankly charmed by her graciousness, was not aware of what had happened, till word was passed that the host had left.

Many guests had fled at the first suggestion of a disagreeable affair. Those that were left, Mrs. Burton parted with, in the same gracious manner that she had received them; aside from her heightened color, and simple apologies for her husband's sudden departure, no one could have detected what had happened.

After everyone had gone, he remembered going to her, as she stood upon the stair, all alone in the big hall, and offering to do anything he could for her. How bravely she had thanked him, and said there



"The patient looked up appealingly at the doctor, standing at the other side of the bed"

was nothing left to be done. He looked up, and there she stood again on that very same stair; he had been so deep in thought, he had not heard the rustle of her gown on the polished floor. She still wore that brave little smile, and carried her head high.

She was the first to speak. "At last I am accepting your offer. I am only sorry that it is such a fearful night to call you out."

She offered her hand quite frankly; he took it, and leading her to a chair, replied, "The offer was made in all sincerity. I'm sorry you waited so long, but I'm glad that you did not forget altogether. What can I do for you?"

She paused, "I think I shall have to trust you, Dr. Beech, with everything, though truthfully, I know very little, myself."

"The night of the reception, the officer who came to make the arrest of my husband, told me that he was one of the most clever forgers in the country, and that one reason that he had come to Barrington was so as to be near the Canadian line, where he could easily slip over and evade the law."

"We had been married just a year when we came here. I know that Mr. Burton selected Barrington as a central place to locate his offices in order that he might more easily attend to his Canadian interests as well as those in the states."

"Just after Mr. Burton left, I received a note from him composed of six words. It stated his innocence, and said that he would return. So I have never left the house, lest he should come in my absence. Of course there has never been a moment, in the twenty-five years, that I have thought it possible that my husband was a forger; but the terrible thought that he was suffering somewhere, or had died, and most of all the fact that I have been helpless to aid him, have been the great sorrows that I have had to endure."

She paused and listened; the big clock on the

stairs chimed the hour, and the house was again still.

The doctor watched her thoughtfully, and then asked quietly, "Has he come?"

"Yes, he came back tonight." She smiled a little reminiscent smile. "It is over twenty-five years since I've seen him. I recognized him at once, but he seemed so weak, so very weak, I feared to wait till morning to call you. He is asleep now; Phoebe is with him and is to call us if he stirs."

She rose, "I think we will go up now, I cannot bear to be away from him a minute that is not necessary." She paused, "He asked especially to see you, Dr. Beech; I think he has something to tell you."

The storm had gained in fury. As they mounted the stairs and passed the rose-window, the flame of the old brass lamp, which the servant had relighted, flickered from the draught that came in at the edges of the casement. The storm was at its height, but as they turned into the big bedroom, full of warmth and light, and the every-day life of an individual, the atmosphere changed, and the depression that had been uppermost in the lower rooms disappeared.

The doctor walked across the room and looked intently down at the face on the pillow. There were unmistakable marks of sadness and suffering about the mouth, but the brow was high and smooth; and though the body was wholly relaxed, in a sleep of absolute exhaustion, there was an

unquestionable air of nobility about the figure, evident at a glance. One hand, very thin, almost emaciated, lay upon the counterpane; the woman drew it tenderly into hers, and pressed her cheek against it. The doctor drew the other from under the cover and felt the pulse.

Instantly the patient roused, and becoming conscious of some presence near, opened his eyes. They rested tenderly and dreamily upon the sweet face of his wife, then seeing the doctor, a troubled look spread over his features. Gradually he gathered the import of the moment and made an effort to speak.

The doctor leaned toward him tenderly, "My turn first, old friend."

There was a definite note of authority in the words, but the affection in the doctor's eyes made the simple words, "old friend," seem like a caress. The invalid lay back, quietly waiting his turn, while the doctor made an examination.

At the conclusion of what appeared to the doctor and anxious wife as an examination of a desperately hopeless case, the doctor looked up at the patient; he had the situation well in hand. With a quiet and thoroughly cheery voice, he remarked, "Now I want you to take a bowl of warm milk, and then I want you to promise me two things: first, that you will not try to talk, and second, that you will set your mind upon sleeping. For twenty-four hours I don't want you to say a word; during that time either Mrs. Burton or I will be here beside your bed. You are in the hands of those you can trust."

The patient looked up with a radiant smile. He meant to protest, but the faces looking down at him were so full of anxiety lest he should not agree, that he had neither the heart nor the strength to object. Still he was restless. Quietly his wife stole to his side and took the thin hand gently in both of hers. "What is it, dear; is there something [Continued on page 12]

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

THE automobile shows offer a fruitful field to the man who studies the motor car industry. This is not only because practically all makes of cars are displayed there, but because it is a meeting ground for the people who are interested in the actual use of the cars.

It is this big human throng that offers the opportunity to study and to observe. Every gathering of people has its keynote and the crowd at the automobile shows is no exception. It is a good-natured crowd, with plenty of leisure, and it slights but few exhibits. It stops to examine every passing novelty, paying its tribute of curiosity to the armored ambulance and the freak racing car.

These things the visitors look upon as the seasoning for the more substantial offerings. They will gather by scores around these booths, just as a man in a book store will thumb the latest novel and then purchase a book by a standard author.

You must not expect a definite expression from the crowd at the show. It is only in the undercurrent of its shrewd questioning that you will find its keynote.

The prime object of the visitors is comparison, and it is very significant to note how big a majority of them have adopted the Buick as a basis for this comparison. You will hear them asking such questions as, "Is that spring suspension as good as the Buick's?" "Why don't you use a full floating axle like the Buick?" "Has this engine as much power as the Buick Valve-in-Head?"

THIS is a genuine tribute to the Buick car and one of which every Buick dealer and every Buick owner should feel proud. Motor cars have been commercially valuable for about twenty years, and since the early days of the industry the Buick has been synonymous with power, reliability and service.

This is a condition that has existed for a good many years past, but never has it been so pronounced as it is today. It is a condition that naturally results from consistently adhering to definite standards of excellence long enough for the public to become thoroughly acquainted with those standards.

Every industry has names and brands that stand out above the rest, and have consequently become known as the best values. They do not achieve this position in a short time, but advance a little at a time until they are firmly established.

This position, once obtained, must be held by the same means that secured it. There is no royal road to public favor, no divine right for the kings of commerce.

The Buick plan has been to strengthen itself as it went along. Each year

has seen extensive additions built to the Buick factory. Each year the Buick designers have added something of value to the design of the Buick Valve-in-Head motor. Each year the manufacturing departments have been equipped with new appliances to insure greater and greater accuracy in building the different parts of Buick cars.

The Buick factory has grown from a little one-story building to a mammoth institution and now covers a tract of land a mile long and about two city blocks wide. The motor building alone has more than seven acres of floor space. The foundries are noted all over the country for the excellence of their facilities. There is an immense drop forge plant, a factory for building bodies, three big axle plants and a vast number of other manufacturing units.

The size of the factory as a whole is almost bewildering to the visitor who sees it for the first time. Yet the size is soon forgotten when he becomes absorbed in studying the way in which perfection is insured in both workmanship and material.

AS a result, Buick cars reach the owners ready for service. The service is built right into them in a systematic, methodical way that cannot fail. By studying and interpreting the needs of motorists in all parts of the world, the Buick designers have succeeded in incorporating into Buick cars a host of desirable features. Separately considered, many of these features might be looked upon as details.

For example, it is hardly to be expected that a man would buy a Buick car simply because it is upholstered in genuine leather. Yet we know that good leather is the most serviceable material for the purpose.

Neither would the Buick be chosen solely because of its easy spring suspension—its perfect acting clutch—its sturdy frame or any one of the countless points in which it excels all but the most expensive cars.

But taken all together, these are the units that go to make up a perfectly balanced whole, which is, after all, the definition of true serviceability.

This is what a man pays for when he buys a motor car—any motor car. In fact, that is what a motor car should be—so many dollars' worth of motoring service.

Yet we hear comparatively little of this kind of service from the average salesman. When service is mentioned we are to understand another kind of service which is secondary to this in-built service because it relates—or should relate—to a much later period in the life of the car.

Moving parts will wear to some extent after more or less use, depending upon their quality and the care that is given them. When this happens the

owner must necessarily fall back upon the other kind of service.

And here again we find the Buick system a basis for critical comparison. Buick dealers are to be found in every section of the country. And wherever there is a Buick dealer there you will find Buick service available. Behind these dealers are the large distributors and branch houses, with traveling service representatives who do nothing else but assist dealers in maintaining Buick service standards. Behind them all is the parent service organization at the factory. The details of this remarkable system are given in an article on page six of this magazine.

THE spirit of this comprehensive system is summed up in the Buick service motto: "Every Buick Valve-in-Head owner is entitled to and will receive prompt and efficient service—the kind that will insure him the uninterrupted use of his investment. No matter where you go, there is a Buick branch or a Buick dealer close at hand, prepared to give you intelligent attention."

These facts in connection with Buick cars have been brought home very forcibly to motorists everywhere. Even men who do not own Buick cars speak of them with great respect because they know of the experiences their friends have had with them. Buick owners speak in glowing terms of their complete satisfaction. There are many families where Buick cars are owned to the exclusion of all others. There are many communities where you will find but few other makes. There are professions where Buick cars predominate to a surprising extent, on account of their never-failing capacity for service.

SO AT the automobile shows you will find the Buick the basis for comparison for a large percentage of the visitors, particularly those who have had experience with several makes of cars, including the Buick. They have learned in their miscellaneous driving the value of strength here, of lightness there, of power, of flexibility and economy. They know that these features all bear a certain definite relation to each other, and that correct design, manufacturing ability and experience are all necessary to produce cars in which this relation is uniformly preserved.

The Buick has become firmly fixed in their minds as the car which has consistently developed along these lines over a period of many years. The policy of its builders has always been progressive, never radical. The good things of yesterday have been the foundation for the advanced construction of today. Each succeeding Buick model is a distinct advance in automobile engineering and constitutes a logical basis for comparison where the utmost in serviceability is a deciding factor.

The Great Buick Service Organization



THE average motor car owner's interest in service usually extends no farther than the work itself—its quality and how quickly it is done. To him service means insuring the continuous use of his motor investment, and he relies on his dealer for service in the same way as he would step into his tailor's to have a button sewed on or his clothes cleaned and pressed.

Now every Buick owner is one of several hundred thousand, and behind the service that he receives from time to time is an organization of great magnitude, with peculiar functions and machinery, and with an investment of several millions of dollars. No matter how long the Buick owner keeps his car, no matter what the nature of the service he may require either now or ten years hence, this Buick service organization must be ready to respond to his needs and fill them efficiently and quickly.

Speed is the essence of good service, and the elimination of transportation and other delays is the big distinguishing feature of the Buick service system. This requires the perfect co-operation of factory, branch houses and dealers, and the maintenance of stocks of parts by all three in the proper ratio.

Large stock depots are operated in connection with each Buick branch house, the parts going forward in carload lots as required. These branch stocks are for use in keeping the parts stocks of the dealers in the different territories always up to date, and to act as reserve stocks in emergency cases where the dealers happen to be out of the parts needed.

The territory covered by each branch house is divided into districts, which are in turn covered by traveling parts representatives, whose duty it is to keep constantly in touch

"Every Buick Valve-in-Head owner is entitled to and will receive prompt and efficient service—the kind that will insure him the uninterrupted use of his investment. No matter where you go, there is a Buick branch or a Buick dealer close at hand to give you intelligent attention."

with the dealers check up their and assist the ing them a standard report direct to supervisor at the branch house, who sees that shipments are made as required.



in each district, parts stocks dealers in keep- ways up to These men the service

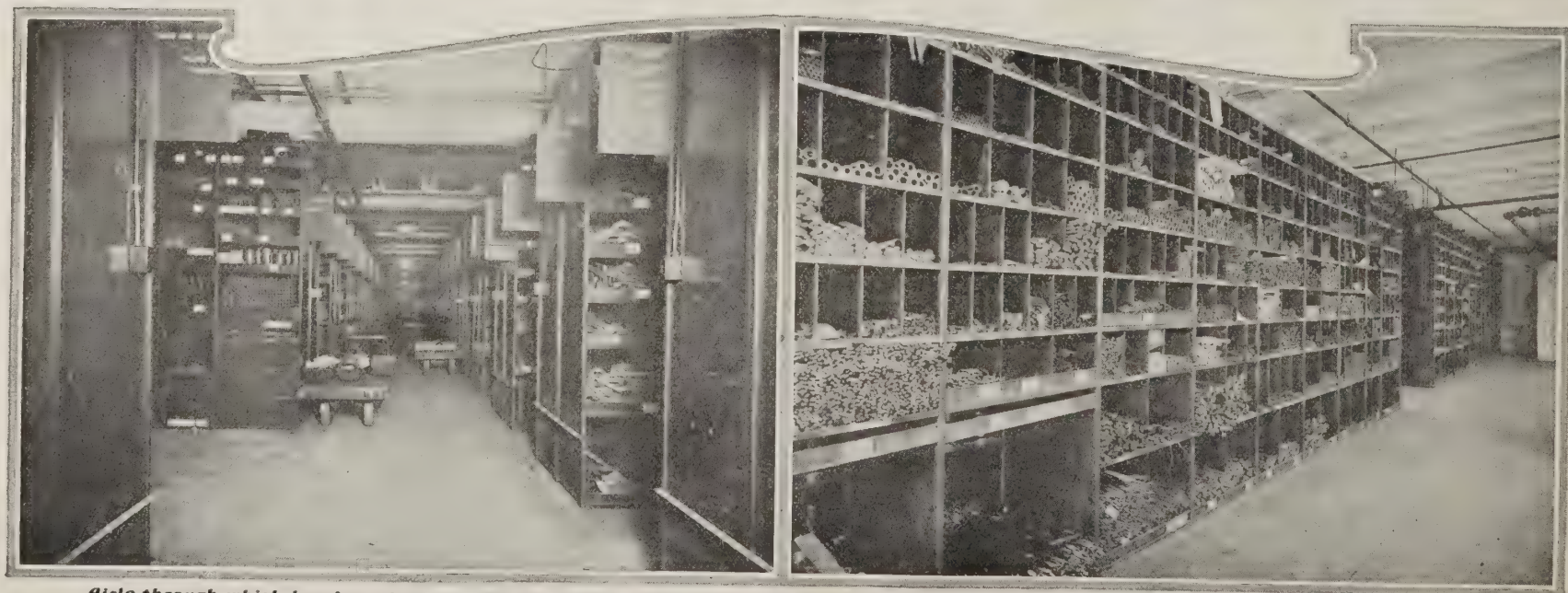
The fountain head of this perfected system is the big parent service department at Flint, occupying a large building by itself and working in the closest harmony with and under the supervision of the sales department. Operating under the service manager is a large office and factory force, including a separate purchasing department for service materials of all kinds.

When a new model is put on the market, the service officials go over the car part by part and determine the amount of service stock to be carried for that model, based on previous experience, with a liberal margin for safety. During each year the most accurate records are kept to show the actual number of each part used during the year, in order that the proper balance may be preserved in the stock bins. This is very essential, because in the stock rooms at the Buick factory are more than 18,000 different kinds of parts, covering all models for nearly twenty years back. Market and labor conditions must also be carefully considered in purchasing and orders placed sufficiently in advance to insure delivery at the right time.

In the receiving department, at the rear of the service building, is a corps of inspectors, whose duty it is to check all incoming material with the blue prints and specifications before sending it through for stock. After inspection the parts are put in proper condition to be put in the bins, in order that they may be in first-class shape when sent out to fill orders. Many of the parts are simply oiled or greased, and numerous small parts are wrapped in paper or put into pasteboard boxes or cartons.

Passing through the inspection department, the parts enter the stock rooms proper, which are filled with Buick parts of every description, all arranged in the most perfect order. The Buick method of storing parts is the fruit of many years of experience, and in spite of the fact that there are more than 18,000 different kinds of parts constantly on hand, they are so perfectly indexed that they can be found with ease, even by an inexperienced person. The parts are stored in groups, i. e., connecting rods for all models are stored in one row of bins, piston rings in another, and so on, each bin bearing the proper part number and the numbers arranged in numerical order.

The bins themselves are worthy of notice, being of steel construction throughout and standardized. This enables the parts stocks in both branch houses and dealers establishments to be kept in the same manner as the factory stock, so that factory-trained service men may be secured by the dealers and enter upon their duties at once without awkwardness or loss of time. These thousands of bins are arranged in long rows on the floors of the service building, and being of uniform size and color, give the stock rooms an appearance of neatness in keeping with the results obtained.

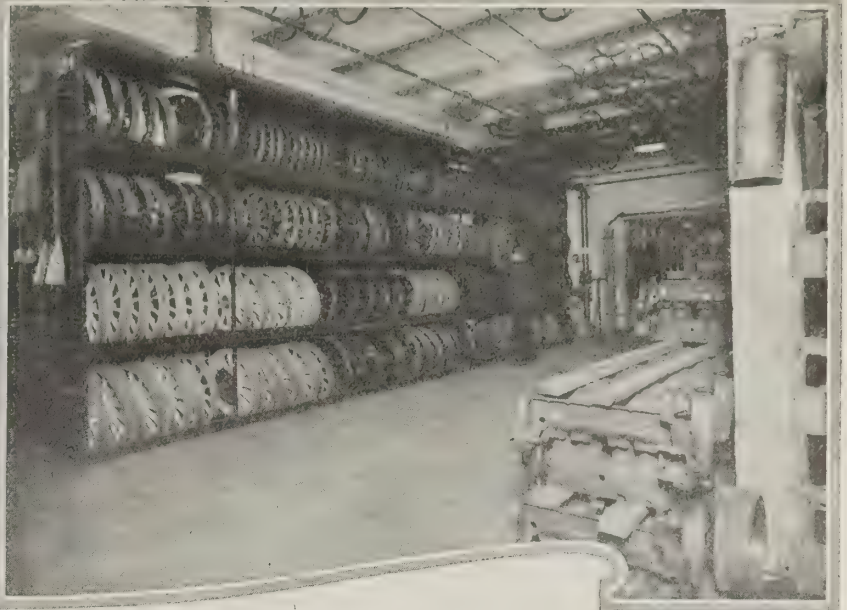


Aisle through which hand trucks proceed to the shipping room

Detail of standardized steel stock bins filled with parts



Steel stock bins containing fenders and sheet metal parts



Method of storing wheels and heavier parts

Painted and enameled parts, such as wheels and fenders, are stored unfinished, only enough of them being painted or enameled to take care of a few weeks' requirements. This insures that Buick owners who order such parts from the factory will receive them in perfect condition, new and bright. The service department maintains its own paint shop.

Buick dealers carry parts in stock at all times, as the owner naturally looks to the dealer for service and the dealers just as naturally expect to be prepared to render it. This is in harmony with the Buick plan and fortifies the dealer against all ordinary service emergencies. For this reason, practically all of the orders received at the factory service department are for dealers' stocks or for replenishing the stocks carried by the large distributors and branch houses.

Telegraph and telephone orders are of course given the preference and orders for express shipment are second. Red tape is eliminated as far as good business will permit in entering orders and getting them turned over to the order fillers in the shortest possible time. At the same time the order is sent to the stock room, a copy is also sent to the shipping department so that a suitable box or crate may be gotten ready in advance of the arrival of the goods in that department.

In the stock rooms there is constant bustle and activity. Each order filler is furnished with a hand truck and starts in with his orders at the end of the room farthest from the shipping room. The lightest parts are located at this point and graded down towards the shipping room, so that the heaviest parts are located near the shipping room door. This provides a definite mode of procedure for the filling of each order and does away with long hauls for the heavy parts, which makes for greater accuracy on the part of the workmen and at the same time lightens their work.

The stock bins are arranged on both sides of the aisles, which are wide enough to admit

of traffic in both directions. The hand truck is left standing in the aisles while the order filler, with the order in his hand, steps to the proper bin, removes the part, compares the part number carefully with the one given on his order, checks the item off his list and moves along to the next bin. In this way the truck is moving always towards the shipping room.

All orders are checked three times before shipment, to eliminate the possibility of error. In the shipping room we find the same systematic methods as in other branches of the service department. Near the door is a long row of bins labeled with the names of the principal cities of the United States. These bins are for express shipments. The goods are placed in the bins, together with the orders, and when the express trucks call for the goods they are all routed properly.

There is also a parcel post department for small and light parts; where the parcels are done up carefully, weighed and marked.

In addition to this, there is an export department for the shipment of parts to foreign countries. There are many Buick cars in the Red Cross service, in addition to those used for business purposes in every part of the world.

Express shipments are made four times daily, and the parcel post shipments are sent direct to the postoffice twice each day.

As the orders arrive in the shipping room, the goods are quickly put in the boxes and crates already prepared, as described above, and a sufficient number of workmen are employed to prevent any delay here. After the express and mail shipments are taken care of, the freight orders are gotten ready and loaded directly into the waiting cars.

At the rear of the shipping department is a long shipping dock, beside which runs a spur track from the Buick yard system of railroad tracks, and as fast as a freight car is loaded it is removed by one of the Buick locomotives and turned over to the railroad company.

This is a very brief picture of the Buick

service organization, but will suffice to show on what a large scale it is operated and how systematic it is from beginning to end. The Buick idea of service is to have parts already in the hands of dealers when needed, rather than to rely upon the quickest means of transportation to get them there on time, or with as little delay as possible. The whole effort and thought of the organization has been bent toward this end, so that telegraph orders are the exception rather than the rule.

The branch houses play a very important part in this service organization. The net effect is to bring all Buick owners closer to the factory, in a service way, because the stocks of the branch houses are so complete that they can take care of the dealers' service stocks and emergency cases, and do it in a fraction of the time that would be required to send clear to the factory. The large distributors also carry complete parts stocks for all Buick models, and in turn take care of the stocks of the dealers operating under them.

It should also be added that the service department has the backing of the big Buick factory in the careful manufacture of parts for service stock. The parts are all manufactured under the same conditions and the same specifications for workmanship and material as parts for new cars. They are given the usual close inspection in the manufacturing departments and an additional inspection before being placed in the bins.

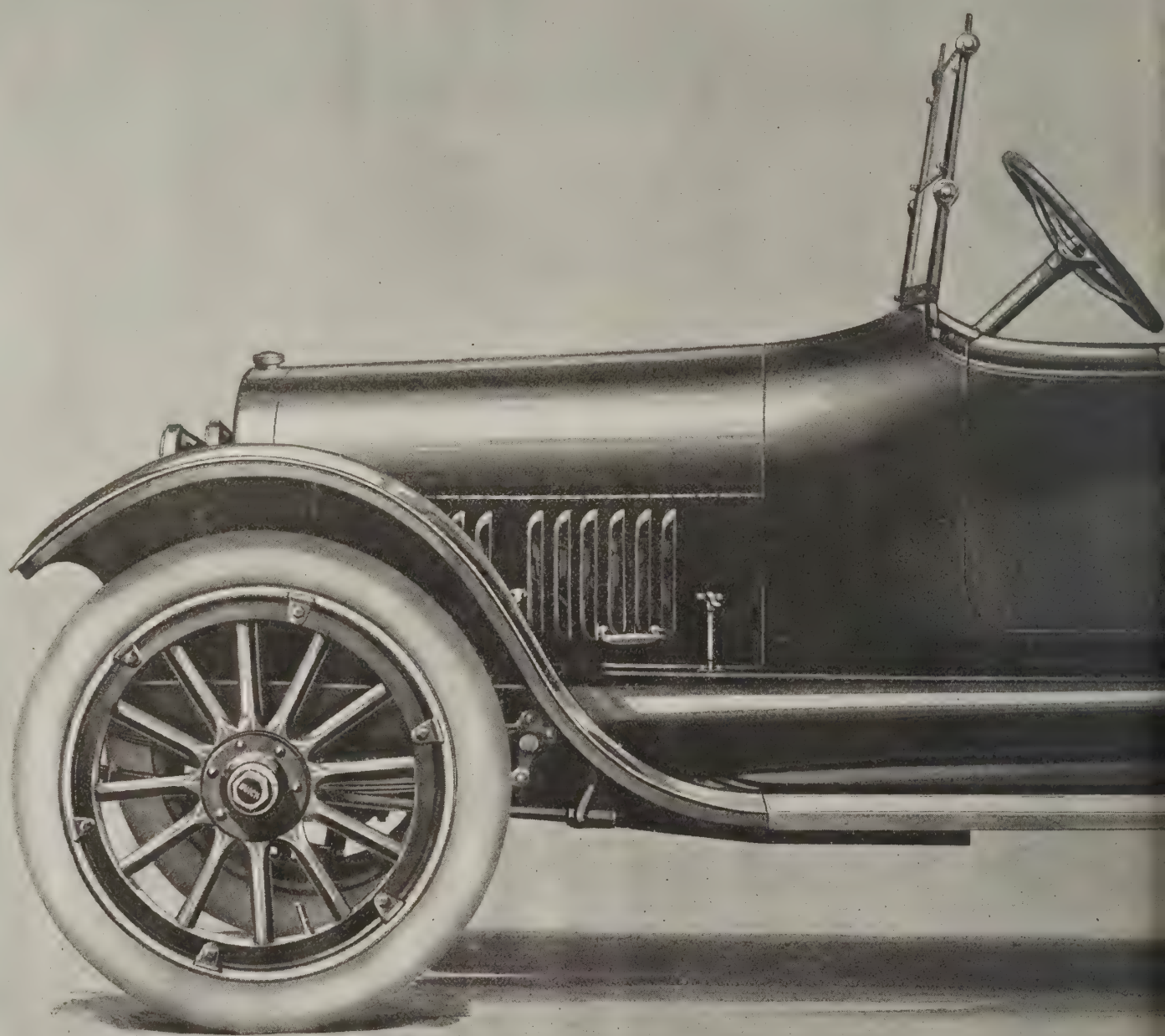
The conditions under which Buick cars are built insures a serviceability which is entirely separate from service in the commonly accepted sense of the word, being compounded from experience, research and unequalled manufacturing facilities. This in-built service has been a Buick characteristic for many years, and being backed by a field service organization of the size and strength of that just described, it will easily account for the genuine satisfaction Buick owners experience in owning and driving these high grade motor cars.



The shipping room, where parts are boxed, crated and marked

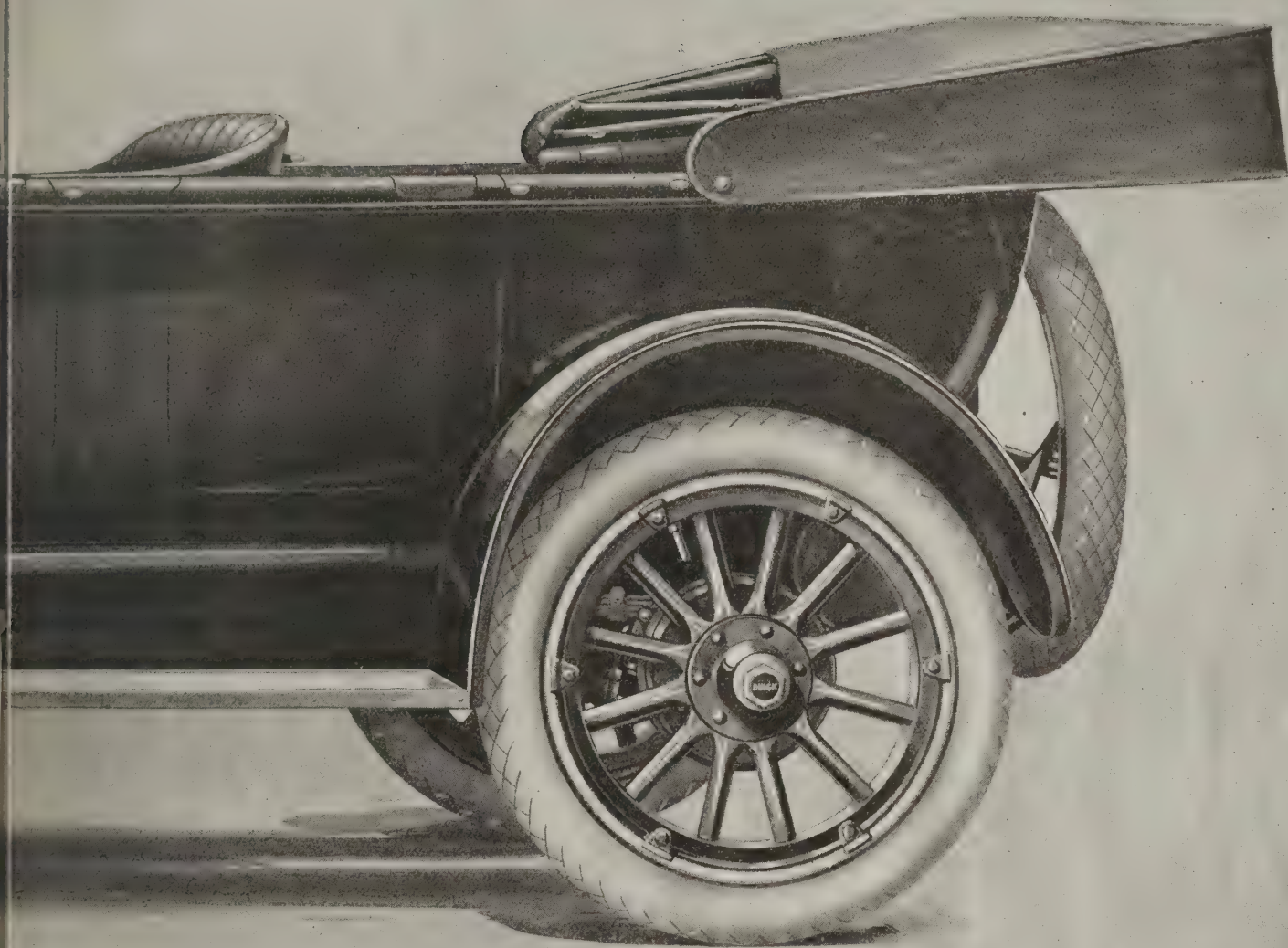


The loading platform, showing loading and rim storage



The Buick Valve-in-Head

Buick
EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK



Model E-Six-Forty-Five

BUICK CARS are famous because of the correct application of the Valve-in-Head principle of motor design for nearly twenty years.

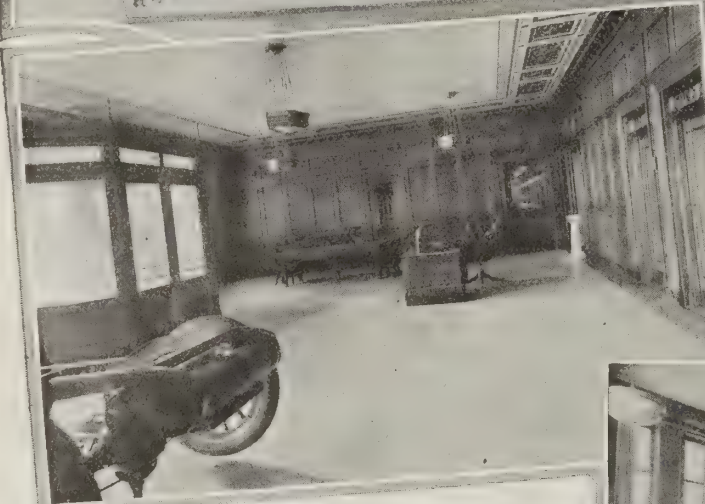
The Buick Motor Company has never singled out a detail of construction as a main talking point, nor held out the bait of novelty to the public. Rather, it has pointed to the effectiveness of the cars as a whole, in their ability to overcome stubborn obstacles and their value as an adjunct to the average man in every field of activity. A Buick car is an asset to every business, to every home, to every individual who has need of dependable transportation. And to this end the Buick Motor Company has fitted Valve-in-Head motors to nine different models for 1918, each with a distinct range of usefulness.

The Model E-Six-Forty-Five is a big car. It is big in power, big in passenger capacity and big in all things that go to make up the sum of stalwart motoring ability.

There is always plenty of room in this car and plenty of comfort. It makes no difference to the owner whether he is going across the city or across the state. Wherever his errand calls him, he can count safely on the Six-Forty-Five.

It is finished as a fine automobile should be and upholstered throughout with genuine leather and curled hair. Buick quality is evident in every detail of this well-balanced motor car, whose in-built goodness makes it an economical purchase in the long run.

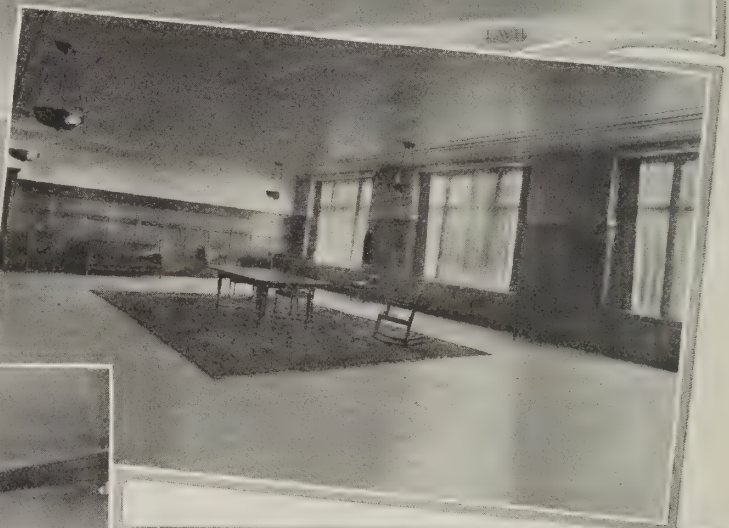
The New Buick Office Building



The second floor lobby, where visitors to the sales and executive departments are interviewed



The directors' room on the second floor



The main floor lobby, communicating by elevators and corridors with all parts of the building

THE fine new office building of the Buick Motor Company at Flint is now completely occupied. And just as great public buildings everywhere are monuments to the principles behind the government that caused them to be erected, so this building will be a lasting tribute to the Buick Valve-in-Head motor that has made it a necessary part of the great Buick organization.

The first impression of the building is one of solidity, and as the eye travels from floor to floor, taking in the details of its handsome facade, the mind unconsciously contrasts its modern architecture with that of the first little Buick building of many years ago, when Flint was but a village and the Valve-in-Head motor was in its infancy.

Inside, the contrast is still further emphasized. The office of early days could have been placed in one corner of the big reception room, where an attendant is kept busy all day in receiving visiting business men and putting them in touch with the men they wish to see.

The main entrance is featured by a marble vestibule with huge bronze doors leading into a reception room with marble floor, walls in paneled wood and rich furniture to match. At the rear of this room are the elevators while on either side are long hallways flanked by offices, all with outside light. The purchasing and production department offices occupy the entire first floor.

On the second floor is a lobby similar to that on the first floor. The arrangement here is also similar, the space being devoted to the

executive and sales offices. On the left are the suites of the President and his assistants, as well as a directors' room and a conference room for the superintendents. On the right are the various sales department offices and a spacious room for sales managers and visiting dealers, where business matters may be discussed in privacy and comfort.

The accounting department occupies the entire third floor and the fourth floor is given over to the engineering department, with the most complete and modern equipment.

The first, second and third floors are connected with the factory by means of covered bridges of fireproof construction, to facilitate intercourse between the office and production departments.

The arrangement of the offices is most ingenious. They are all placed on either side of the main corridors, which extend clear to either end of the building. Every office in the building has outside light and artificial light is never necessary except on the darkest days. When it is needed, soft, pleasant illumination is furnished by electric fixtures of the indirect or semi-indirect type.

In the basement of the building are cloak rooms and club rooms for the convenience of both men and women employes, and no details have been omitted in the effort to make the surroundings pleasant.

The building is fitted out with every modern device that can be used to advantage in connection with the well-laid-out offices. So there are

two elevators. Messages are sent in a few seconds by a pneumatic tube system connecting all departments. Visitors are announced in the same manner. Washed air ventilation keeps the air pure and sweet and passes through a plenum chamber under each floor and out over the radiators in each room, thus eliminating cold drafts. The temperature of each office is regulated by thermostats to suit the individual. Drinking water is filtered and cooled automatically. Marble wash rooms are provided on every floor. Telegraph and telephone connections are located in the building, with individual telephones for those who need them. A built-in vacuum cleaner system simplifies the work of cleaning the big rugs throughout the building, while hardwood and marble floors still further insure sanitation.

Outside the building is faced with vitrified brick of a rich, deep buff, with base, belt courses, cornice, brackets, main entrance feature and window sills of buff Bedford limestone. The entrance door sills, platform and steps are of granite with fine hammered finish, while the railings and lamp standards on the front entrance and first and second story windows are of ornamental wrought iron. The building throughout is of fireproof construction.

This structure is dedicated to economy and efficiency in conducting Buick business. It is built for the ages, of steel and stone and concrete, and while every detail of its construction is of excellent quality, there is nothing that does not in some way contribute to long life and effective service.

The Buick Branch in Milwaukee

THE Buick Branch at Milwaukee looks after a large territory, embracing the entire state of Wisconsin and the upper peninsula of Michigan. It is an important link in the big Buick service chain that stretches from one extremity of the country to the other and binds the owner and dealer and factory together with ties of mutual interest.

The building occupied by the Milwaukee Branch is situated on Wisconsin Street, the principal thoroughfare of the city. It is a three story building with full basement, and has a frontage of sixty feet and a depth of 150 feet.

On the first floor of the building is a fine showroom, 60 feet square, capable of displaying a full line of Buick cars. This showroom is a model of neatness and convenience and has a broad open staircase communicating with the offices on the second floor.

In the rear of the building, behind the showroom, is a modern garage with complete equipment, where local service is taken care of by a crew of expert mechanics.

On the second floor the offices occupy a space 48 by 60 feet, with an office force of 20 employees. Private offices for the Branch Manager and Sales Manager are also provided.

The parts service department is located on the second floor and is equipped with the standard steel parts bins described in the article on service in this month's Bulletin. These steel bins have been found by the Buick Motor Co. to be ideal for storing parts, as they give the double advantage of perfect protection and easy indexing, besides being very neat in appearance. Enough of this equipment has been installed to accommodate parts for Buick cars of every description. Additional storage space has been provided on the third floor and in the basement. The Milwaukee Branch is nicely located, particularly from the service standpoint, as it is convenient to all transportation companies in Milwaukee and can make prompt shipments to any part of the territory.



The fine showroom of the Milwaukee Branch communicates directly with the offices by means of the stairway in the rear.

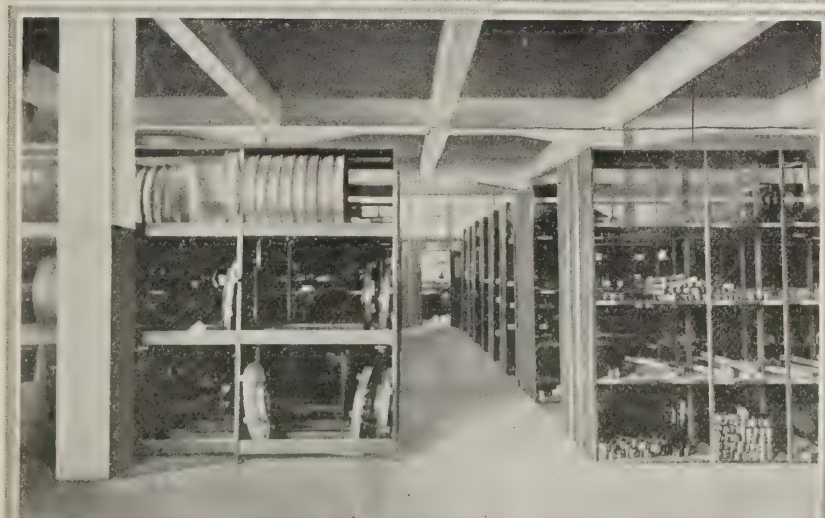


This three story building on Wisconsin street houses the Buick Milwaukee Branch. It has a frontage of 60 feet and a depth of 150 feet, with a fine showroom, large parts depot, modern garage and repair shop, and ample facilities for taking care of Buick interests in Wisconsin and Upper Michigan.

The shop is located on the third floor.

In addition to the force in Milwaukee, there is a traveling force continually in the territory, reporting direct to the Branch Manager. This traveling force consists of sales and service men, each of whom has a district, thus keeping closely in touch with all dealers and rendering every possible assistance in facilitating service.

The importance of the Buick Branches throughout the country lies mainly in the fact that they form points of contact with the factory, and through their cooperation with the dealers eliminate transportation delays which might otherwise occur to the detriment of service.



A view in the parts depot of the Milwaukee Buick Branch, where a complete stock of parts for all Buick models is carried to replenish the stocks of Buick dealers in the territory.

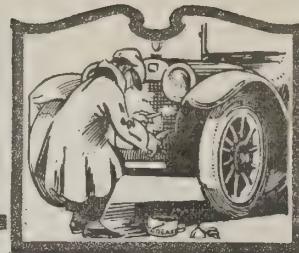


The offices of the Milwaukee Buick Branch are on the second floor. They are well lighted and ventilated, and afford plenty of room for future expansion.



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Lubricating the Car

A MOTOR car should be lubricated regularly in order to keep it in the best possible working condition. By the aid of the accompanying lubrication chart and brief directions, this is easily accomplished and can be done as well in the home garage as elsewhere.

1. Motor—Motor oil.

Fill crank case reservoir. Do not allow the oil to come above the petcock level, as an excess will only cause the motor to smoke. The oil sight feed on the instrument plate shows circulation of oil but does not tell when the supply is running low. Watch the oil gauge on the crank case. Use a lighter grade of oil in cold weather.

2. Transmission—Use steam cylinder oil for all temperatures above freezing. Thin with motor oil sufficiently to make liquid below freezing temperature.

3. Rear axle—Use steam cylinder oil for all temperatures above freezing. Thin with motor oil sufficiently to make liquid below freezing temperature.

4. Steering gear—Steam cylinder oil.

5. Timing gears—Steam cylinder oil.

6. Pump shaft bearing—Motor oil.

At frequent intervals.

7. Valve rocker arms—Motor oil.

Apply a few drops of oil to the oil holes in each rocker arm.

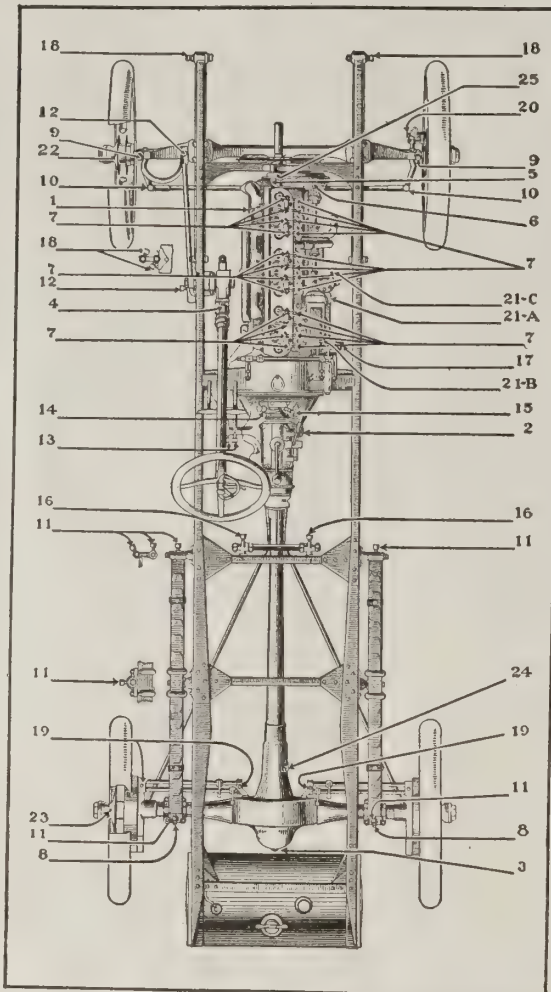
8. Rear spring seat—Motor oil.

9. King bolts—Motor oil.

10. Tie rod bolts—Soft cup grease.

11. Rear spring—Soft cup grease.

12. Steering connecting rod—Soft cup grease.



13. Brake and clutch pedals—Soft cup grease.
14. Clutch release fork pin—Soft cup grease.
15. Clutch release bearing retainer—Soft cup grease.

16. Brake shaft—Soft cup grease.

17. Starter sliding gears—Soft cup grease.

18. Front spring—Soft cup grease.

19. Brake cam shaft—Soft cup grease.

20. Speedometer swivel joint—Soft cup grease.

21. Delco generator. A—Soft cup grease.

B—Motor oil. C—Motor oil.

22. Front wheels—Soft cup grease.

23. Rear wheels—Soft cup grease.

24. Pinion shaft bearing—Soft cup grease.

25. Fan hub—Motor oil.

Has Owned Eight Buicks

A LITTLE more than six years ago," writes Mr. John Miller, of Easton, Pa., "I bought a little open body roadster, 1908, Model 10, with a complete record of its performance to that time. In 1913 I lengthened the frame and changed the wheel base to 105 inches, and in 1914 built a touring body for it. For the next two years we used this as a family touring car, taking extended trips without any troubles and with the utmost confidence in the car. I have now put on a truck body and it is in daily use hauling loads up to 1000 pounds. This car is now ten years old, having traveled about 143,000 miles. I also have a Model 17 car in good condition. For touring I am using a D-Six-45 which has given entire satisfaction in the 11,000 miles it has been used. At various times I have driven eight different models of Buicks and if I ever buy another car it will certainly be a Buick."

The House of the Vanished Host

Continued from Page four

you want?" He nodded, and she leaned close to catch the whispered words, "There's a paneled box, in the snow, on the right of the big gate. I must have it; I left it there, I couldn't carry it any farther."

"You shall, dear." Her tone was most reassuring to the sufferer. In a few moments he slipped into a doze, then into a stupor, and forty-eight hours passed before he was sufficiently himself again to recall the two faces, or his treasured box.

It was the morning of the second day after the storm before he was thoroughly conscious of his surroundings; then he smiled at the doctor and Mrs. Burton and remarked quietly, "I believe you have pulled me through."

"I think you are on pretty safe ground now, if you will follow instructions as well as you have so far," replied the big doctor, and he smiled down at the very fine features of the man he was lifting to a half reclining posture among the pillows.

"Now you are going to have something to eat, and after that you may talk for twenty minutes; but if you get excited for one instant in that time, Mrs. Burton and I will have to cut you off till you are stronger; is that fair?"

"Yes, quite fair," replied the invalid, and taking the hand of his wife, who was assisting, he pressed it very gently to his lips. The doctor turned away and looked out over the unbroken white of the drifts, and watched the snow-birds, as they searched here and there for food. He was recalled by the man who lay among the pillows, his face radiant with the joy of his return.

"Life's not half bad to a fellow after all, when the woman he loves will believe in him, and loves him for a stretch of twenty-five years, not knowing whether he is dead or alive," he whispered, as the doctor bent over him.

Mrs. Burton blushed with the joy of it all. "But, dearest, you forget that you wrote me you were coming. I've just been waiting, I

knew you would come, and of course I knew that you were innocent."

Mr. Burton immediately became more serious, "That brings us to the point. Did you find the paneled box?"

"Yes, old Charles dug it out, and brought it up to the house yesterday morning. He was three hours digging before he came across it; then it was at the right of the gate, just as you said." Mrs. Burton smiled back at the very serious face lifted to hers.

The man looked down and paused, as though in search of the most important facts to relate first in case his strength should give out during the undertaking. Then he began to talk in a quiet, business-like manner.

"To begin with, in that box is all the legal evidence needed to prove my innocence from the charge of forgery, that was preferred against me twenty-five years ago. Neither of you need that, it is for the outside world. What you alone are interested in is why I have remained away, when I have had enough proof all this time to clear myself before the world."

"First of all, I left as I did to protect another person, knowing that I could return and prove my own innocence as soon as I could assure myself of the safety of the other person, and extract a promise that there should be no repetition of the deed. That person was my twin brother. He had a beautiful wife, as lovely as mine," he added quietly, as though he were speaking only to the doctor, "and a little son. In order to save the disgrace, that it would all mean in the future life of that little child, I did it, knowing that my wife would agree with me, that it was the right thing to do, and being confident that I could clear myself and return to her speedily."

"Then word came that Mrs. Burton had closed the house immediately and started with her maid for our relatives in England. There I planned to join her, when one morning I picked up a paper, and scanning the headlines, to my utter horror, saw the sinking of one of the big ocean liners, and at the head of the list

of those drowned or unaccounted for among the passengers were the names of my wife and her maid."

He paused for breath. The vivid recollection of the tragedy, even though he knew now that it was all a mistake, was almost too much for his strength.

"O Beloved, Beloved," and Mrs. Burton sprang to his side. "I did plan to go to our relatives in England, thinking that you could come to me better there; then I got your letter, saying that you would come back here so I just staid, waiting from day to day. The ship we had booked our passage on was sunk, but it never occurred to me that you would see the account." She looked down at the white face that the tragic memory had made whiter, and gently lowering the head to the pillow beside her, said, "I guess this will be enough for this time, you are almost exhausted."

The patient looked up appealingly at the doctor, standing at the other side of the bed, "I must finish, there is only a little to tell now; I truly cannot rest till it is off my mind."

The doctor nodded his acquiescence, and the patient proceeded.

"After that I gave up the idea of returning and possibly endangering my brother's safety. He gave me his word of honor that his dealings would be strictly honorable in the future, and until his death, two years later, his integrity could never be questioned, I feel safe to say. His wife had been an invalid for years, she lived only a few months after he was taken. During the last year the family has become extinct, through the death of the son who was drowned in the Adirondacks, where he was camping."

He paused and stretching out his hand, grasped the doctor's. With the weight of the past off his mind he seemed to regain strength; a quiet, satisfied smile spread over the fine features as he said, "I beg of you that you will help me gain back my strength, so that I may live and make happy this wonderful little woman."

Buick Sedans Take Fremont by Storm



F. A. Durnwald



C. F. Keating



Theo. A. Hilt

Fremont-Buick Co.



"I surely would advise anyone desiring the best to purchase a Buick."
—John W. Voorhies



"We think our Buick Model E-Six-50 Sedan is a wonder."—Mrs. Carl Smith



"If I were in the market for another car, a Buick would be my choice."—
Atty. D. M. Hall



"Must say that I am well-pleased with the car."—E. J. Franks



"I have owned seven cars, but the Buick has them all beat for power, easy running and low cost of upkeep."—Michael Hetrick

AS ITS peculiar usefulness becomes more widely known, the Sedan type of motor car is growing in popularity among motorists. It readily adapts itself to the immediate use for which it is required, and the field that it covers is perhaps broader than that of any other type of car.

As an illustration, ten photographs are reproduced on this page showing ten Buick Sedans that have been sold during the past few months in the Fremont, Ohio, territory. While Fremont is a bustling city, it is not a very large one, having about ten or twelve thousand inhabitants. Yet practically every class of motorists in Fremont are represented among the Buick Sedan owners. There are business men who find the Sedan useful all the year 'round. There are young matrons who use it as a family conveyance on account of its preparedness for all sorts of weather conditions. There are elderly ladies who would find an open car serviceable only part of the time. There are farmers, business and professional men whose interests are diversified, but whose motoring requirements are nearly identical.

This example is cited to show that motor car buying is more selective today than it has ever been. People think more about their needs as to body types, as well as giving the mechanical construction their serious consideration. Both factors must meet the dictates of their judgment, and that is why the Buick Motor Company has developed nine distinct Valve-in-Head models for the 1918 season, with three Sedan types among the number.

The Fremont - Buick Co., who started handling Buick cars in 1915, have made a careful study of this phase of the business and have met with marked success. In 1915 they sold 25 Buick cars in Fremont and the surrounding territory. In 1916 the number was increased to 77 cars and in 1917 they sold 166 Buick Valve-in-Head cars of all types. The firm is composed of Theodore A. Hilt, Fred Durnwald and C. F. Keating, who are to be congratulated on the success they have made as a result of finding out how Buick utility can be applied to the needs of the individual.



"We purchased the Buick Sedan because it is the ideal family car."—
Mrs. Wm. Schwartz



"This car has exceeded all my expectations of cost of operating and upkeep."—F. R. Havens



"This car answers all purposes for business or professional use."—
Dr. C. N. Mowry



"My Buick Sedan has given the best satisfaction possible."—E. E. Bowlus



"My car is in use every day, regardless of weather conditions."—Creighton Thompson

"Service First" is the Buick Motto



This is the new home of the Central Auto Co., Buick dealers at West Bend, Wis. The building is of solid brick construction and has a nice showroom and complete garage equipment.

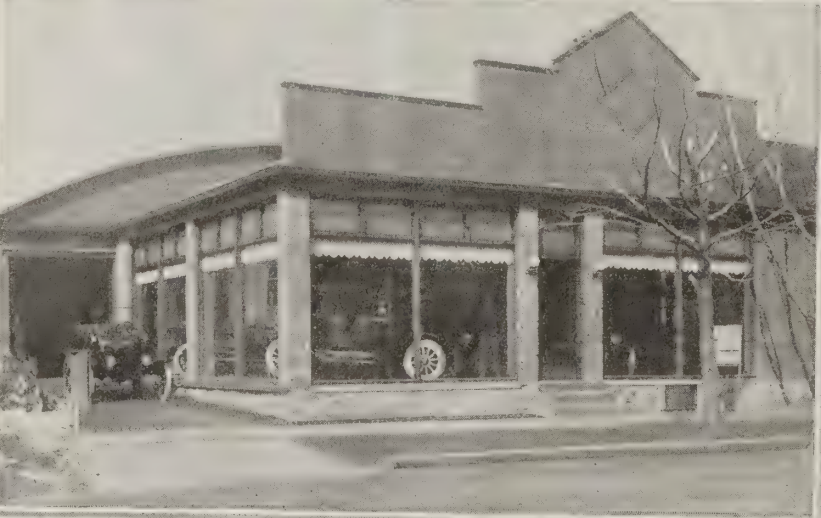
During November last, these eight Shriners from Wichita Falls, Texas, went to Dallas to attend the Shrine ceremonial at Hella Temple. Three of them are men who had just purchased Buick cars and were driving their own cars home. The rest are members of the Staley Motor and Supply Co., Buick dealers in Wichita Falls.



The Deerfield Auto and Implement Co. are energetic Buick dealers located at Deerfield, Wis. They have a modern establishment with plenty of room to take care of their growing business.



Lunt and Davison have handled the retail sales of Buick cars in Flint for the past two years. Prior to that time there was a local salesroom at the Buick factory, with Mr. Lunt in charge and Mr. Davison assisting him. The business finally grew to such proportions that it was found advisable to have it handled by local dealers, and Messrs. Lunt and Davison, on account of their long factory experience, were selected to handle the Buick in its home city. They have a fine new building and excellent facilities for both sales and service.



Fallon's Garage, Hancock, Mich., has grown from a tiny establishment two years ago to this modern garage and machine shop, 60 by 120 feet in size. Buick cars are handled exclusively and service to owners is carried out in a thorough manner. The front of the building is arranged as a showroom, with light on two sides and large plate glass windows that provide plenty of opportunity for effective window display. In the rear, with a convenient driveway leading to the main street, is the big, roomy garage and repair department.



The West Side Buick Co., of Milwaukee, occupy this two-story building at 2715 Grand Avenue. In addition to their fine retail sales rooms, they have a modern garage and machine shop, providing excellent facilities for service to owners. This is an entirely independent organization from the Buick factory branch in Milwaukee, being directly in touch with owners and looking after individual sales and service interests.

Buick

EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK



INDUSTRIES of every description are daily becoming more and more dependent upon the motor car. In a thousand ways it contributes its share of that dispatch which is so essential in successfully-conducting modern business enterprises.

Efficiency and economy are prime requisites in this class of service, and here we find the cause for Buick supremacy in business circles.

This supremacy is nation-wide and embraces all manner of industries. For Buick cars are proof against variations in climate and competent to deal with the most difficult road conditions. Thus they shorten the distance between different points and penetrate otherwise inaccessible places.

From the very birth of the automobile industry, Buick cars have been built around the Valve-in-Head principle of design. Today they represent the highest development of this correct principle and are triumphs of mechanical excellence.

A wide choice of carefully designed body types simplifies the selection of the right Buick model for any use, carrying with it the assurance of long and care-free service.

BUICK MOTOR COMPANY

Pioneer Builders of Valve-in-Head Motor Cars

MAIN OFFICE AND FACTORY

FLINT, MICHIGAN

BRANCHES IN ALL PRINCIPAL CITIES. DEALERS EVERYWHERE

Buick

Everybody Knows
Valve-in-Head means Buick



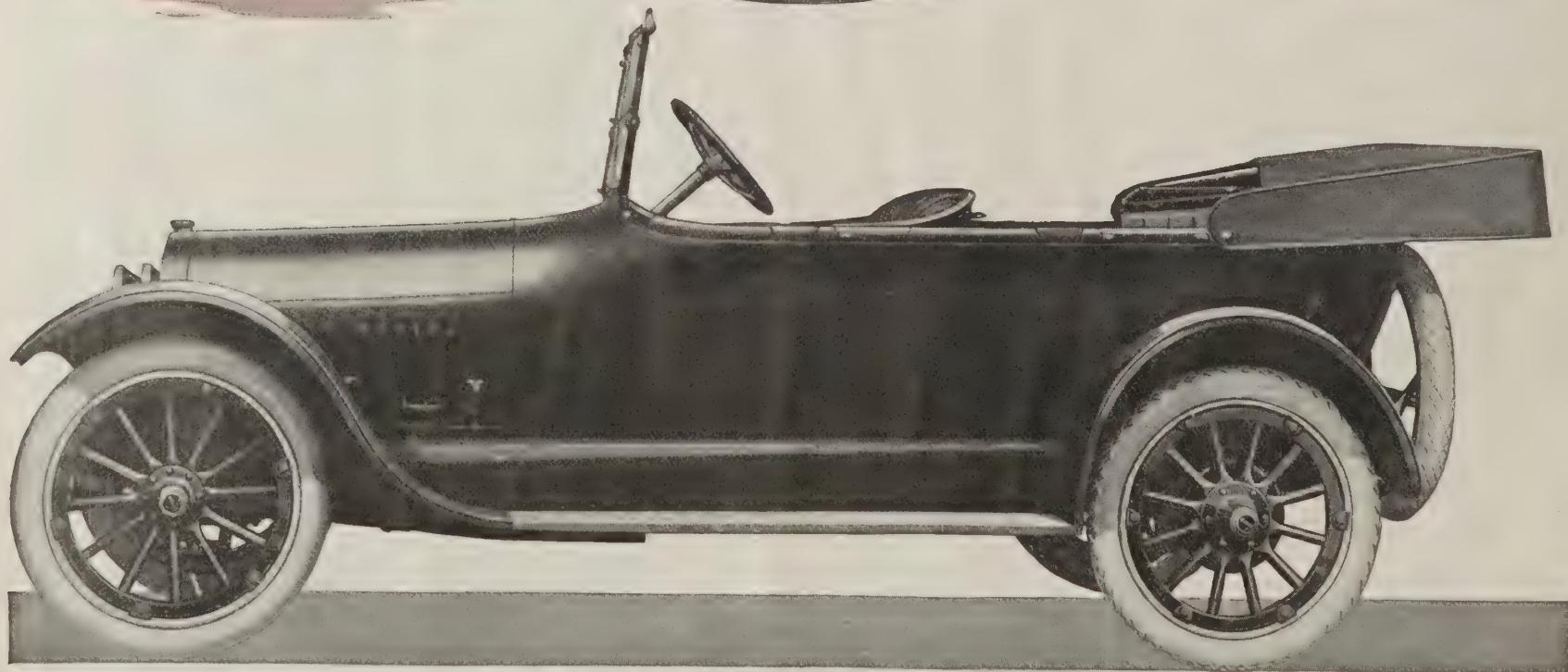
ALL IN THE DAYS WORK

Successful handling of today's affairs, national or personal, demands that conservation of time and rapid contact made possible only by efficient transportation.

The industrial leader whose daily round includes the rush from office to bank, factory, construction work, national headquarters—is but one example of the man whose points of contact depend on this great conservator of time and energy, the modern motor car.

Buick power with speed and flexibility makes Buick cars especially valuable in these rushing times. There is also the added advantage in economy of operation.

Nowadays when men live weeks in days and human energy is at a premium, the Buick car takes high place as an efficiency factor in America's destiny. Helping to make our national activities possible on their present scale — this is the function of the Buick car and the privilege of its builders.



Buick Model E-Six-Forty-Five—Five-Passenger Open Model

BUICK MOTOR COMPANY — *Main Office and Factory, FLINT, MICH.*
Pioneer Builders of Valve-in-Head Motor Cars

Branches in all principal cities

Dealers everywhere

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FEB 17 1918

THE Buick BULLETIN

Published by the Sales Department
of the Buick Motor Company

MARCH 1918

FIVE CENTS A COPY



PAGE FIVE—"The standing of the company, plus the integrity of the dealer, determines the serviceability of the product to the consumer."



Spring

Gentle Spring! in sunshine clad,
Well dost thou thy power display!
For Winter maketh the light heart sad,
And thou, thou makest the sad heart gay.

He sees thee, and calls to his gloomy train
The sleet, and the snow, and the wind, and the rain;
And they shrink away, and they flee in fear,
When thy merry step draws near.

—Longfellow

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E.T. Strong Managing Editor

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Flint, Michigan, U. S. A.

Number Three

A CHIP OF THE OLD BLOCK

DON'T be unreasonable, Dad. You're going away, and stay away till you're fit. I'll run the Clarion till you come back."

The sick man brightened. "You won't mind?" he questioned.

"I'd love to try," asserted Helen. "I'll do my best not to make a mess of things."

And thus it came about that Helen Cole dropped her college course in her sophomore year, and took up the management of the Emporia Clarion. She had often helped her father in the office, and was rather proud of her ability to set a good string of type, to read proof, write copy, and to do the thousand and one things required in a country newspaper office. After she took charge of the Clarion, it did not take her long to discover some of the things which had contributed to the undermining of her father's health. She had just finished a conciliatory interview with Mr. Bangs, the old foreman, when President Lowe opened the door of her sanctum.

"Ah, Miss Editor," he began suavely, "glad to find you in. Have you a few minutes to spare?"

The editor smiled her prettiest. "I certainly have," said she.

"Sorry to know the pater is on the shelf," he remarked easily. "Expect he'll be out of commission very long?"

Helen's face clouded. "Father is in for nearly a year's inactivity at least," she said unhappily. "Poor Dad's worked too hard for a long time, and now he's paying the piper."

"It's his own fault—the working too hard," volunteered the visitor. "Begging your pardon, dear Miss Cole, but your father's ideas of business are too old-fashioned for these days."

"You mean?" questioned Helen, with a suspicion of ice in her voice.

"No offense," said he, with a gracious wave of his hand, "only that your father has let slip many opportunities to make money in a—perfectly legitimate way."

"Meaning that he has failed to feather his own nest because he refused to do something—well, what is the proper word to use—shady?" asked Helen keenly.

"Oh, I protest. Nothing shady. Most certainly not. But your father has always been absurdly independent and blind to his own interest, and—yes, I'll be frank—he has for some time been bucking against our company's interests, and that, you must allow, is very poor policy."

"It would seem so," admitted Helen. "Granting that, would you mind explaining?"

"Well," he began gravely, "I'll explain as briefly as possible. I'll be very frank—and I hope you'll see how mistaken your father has been, and that the Clarion under its new management, and The Consolidated Land and Traction Co., will be able to work together for the best interests of Emporia."

Helen nodded.

"Well, then," continued the visitor, "Mr Cole got the mistaken idea that the present

By ANTONIA J. STEMPLE

Illustrated by Jack J. Wilson

development schemes of our company are not legitimate. We are spending a lot of money in the town; developing extensive power projects; have increased our capital stock; organized subsidiary companies, and so on.



In short, we are doing big business. We and our allied companies have an immense amount of printing done yearly, and naturally it goes to our friends. All we want is the Clarion's good will, and willingness to say such good things of our enterprises as we deserve."

"That's fair enough," remarked Helen. "Hasn't Dad done that?"

"No—that is, not exactly. He looks with suspicion upon the company, and either says nothing, which is bad enough, or says the wrong things—or uses sarcasm—or—well, puts things in the wrong light."

"Poor, misguided Dad!" exclaimed Helen. "He can be sarcastic, and always goes his own gait, regardless of consequences."

"Yes, regardless of consequences. Nobody ever asked him to do anything wrong, but—"

"He won't be dictated to?" suggested Helen. "Is that it?"

"Exactly," nodded the president. "And sometimes it is wiser to take the advice of others."

"But I should hardly think that anything this little country paper, might say could

have very much influence." Helen made this wicked thrust purposely, and she awaited results. President Lowe did not detect the barb, and fell into the trap.

"But Mr. Cole is no ordinary writer or editor," said the great man. "He is horribly sarcastic, and has a way of putting things in so cute a way that everybody laughs. His sarcastic and pointed writings hold us up to ridicule, or worse. A company or person can stand abuse or most anything else, but it is fatal to be laughed at."

"And Daddy has a fatal facility for detecting the weak point in anything and building a laugh on it," admitted Helen, very cheerfully.

Mr. Lowe nodded. "Well, all we want is the Clarion's good will and to have the paper put our various activities in the right light. You understand?"

"I believe I do. The point is that you simply wish the Clarion's point of view to coincide with your company's. Am I correct?"

"Put in a very bald way—yes."

"If it does?" Helen's manner and tone were wonderfully like her father's.

"If it does, the company will be grateful. Incidentally, we shall be glad to turn the Clarion's way, as much of our large printing contracts as your office can handle."

"And if it doesn't?"

"My dear young lady! I think we understand each other. You can scarcely anticipate finding out for yourself how unpleasant such a situation may be."

As Helen thought over this interview afterwards she could not repress a smile. She itched to write her father about it. But when her cousin Jack, the rising young village lawyer, began to rave about the company, she listened intently to his strictures of "old Lowe" and the latest of the company's projects.

"Too bad Uncle Horace isn't here," he exclaimed regretfully. He'd let the daylight through that crooked little scheme of theirs about the new bridge."

"Don't you credit me with any brains?" asked his cousin demurely.

Jack stared and looked puzzled. "By George, Nell, but it would be great if you'd just get after 'em, hammer and tongs. Nothing old Lowe fears like publicity, and he's bought up every editorial mouth in the county, and got them all to sing the song he wants. Well, it's no use spoiling your bread and butter, but I wish somebody would expose that complacent old grafter and his grafting company."

"Why don't you tell me what you are driving at?" suggested the girl. "I hate hints."

It took no urging to get Jack to launch out into a long and interesting account of The Consolidated Land and Traction Co.'s tactics, involved machinations, and not altogether unclouded history. Helen listened as one entranced.

"Where did you learn all this?" she asked when the young attorney paused for breath. "Are you certain of your facts?"

"Absolutely. I've had my ear to the ground for a long time. A lot of old fellows like Uncle Horace know all these things, but nobody dares to breathe them."

Thereafter paragraphs began to appear in the Clarion which read suspiciously as though Mr. Cole were again on deck. Mr. Lowe read these items the first few times with merely an annoyed toss of the head. When, however, one week, a decidedly trenchant article on the proposed new bridge appeared, he made up his mind that this little insurrection must be nipped in the bud.

"I fear, Miss Cole, you did not fully grasp my meaning when I was in before," began the president, at this second interview. "The Clarion's comments on the bridge project are hardly in line with our desires. In fact, they are distinctly prejudicial to our interests."

"Indeed!" Helen's tones were very even. "That is unfortunate. I wrote from the public's point of view."

President Lowe got a trifle red. "I am working for my company, not the public," he exploded, "and I advise you to let the public look after their own interests. The dear public is a very poor paymaster."

"But I have a distinct leaning toward the public when the public is right," protested the girl.

"My company is *always* right," suggested the president, cunningly. "If the Clarion continues to harp on its present objectionable string, I ——" There was a significant pause.

"Well?"

"I'll fight you like I would any man who bucks against me," threatened the magnate. "You get me?"

"I believe I do," was the sweet rejoinder. "But you might as well understand, first as last, that you can't dictate my policy, and if you don't play straight, I shall not hesitate to do some airing of your company's transactions. Good morning, Mr. Lowe," and the interview ended.

Then came the deluge. Foreman Bangs sidled into her office and announced that he was leaving at the end of the week. He refused to say anything further, but Jack enlightened her.

"Why, my dear, old man Lowe is going to start an opposition paper. Bangs has been hired to take charge of the new plant. The Clarion is to be put out of the running."

Helen turned a trifle pale. "Isn't he mean! But I'll win out Jack, see if I don't."

The next week Billy Van sailed into town and stepped into the foremanship. He put in his first day getting the lay of the land, and he took to Jack at first sight. "There's going to be some fun around here," he announced. "That Mr. Lowe appears to be a crafty old duck, and will bear watching. But it'll be sport beating those grafters, even if we haven't the money."

"Don't get rash," advised the attorney. "It'll take all your brains to pull the Clarion through. By the way, you say you graduated from Ohio in '14?" Billy nodded.

"Well, you must have known Stewart Lowe, then. He was Ohio, '14, too, I believe."

"You bet he was. Great guns, is he *the* Thomas Lowe's son?"

"The same," smiled Jack. "An engineer for his father's company, at that. But he's a very good sort. Not like his father."

"I know he's white, all through," asserted Billy knowingly, "unless he's changed since he left college."

Billy lost no time in hunting up his old classmate, and they were soon on very friendly terms. He at once introduced his friend to

Miss Cole, and was gratified to note that the two took to each other at once.

Old Mr. Lowe, despite his egoism and love of power, was yet absurdly childish when his own personality was touched. Therefore, when, after a fit of sickness, the Clarion printed a local to the effect that "President Lowe of The Consolidated Land and Traction Co. is on the street again, after being housed for some time by a bad attack of the gout," his pride was touched to the quick, and he lost no time in calling at the Clarion office to clear the air. To his amazement, he found his son Stewart there, in an animated conversation with the editor.



"Don't you dare to print this, miss"

"Haven't you any better use for your time than hanging around here?" he abruptly shot at his son, regardless of Helen's presence. "I came to tell you, Miss Cole, that I have suffered all the indignities at your hands that I propose to. I had the gout, indeed! Nothing but a touch of rheumatism."

Miss Cole smiled. "Oh, I see. I'm very sorry I credited you with something beyond you," she said sweetly. "I understood it was gout, and—"

"Never mind what you understood," sputtered the irate gentleman, now in a totally uncontrolled rage. "Hereafter I forbid you to mention my name in any shape or manner in your paper. Do you understand?"

"Perfectly," responded Helen with dignity, "You will have no further reason to complain, Mr. Lowe. I shall be most happy to oblige you!"

A few weeks later the town was thrown into a fit of laughter and Mr. Lowe into a towering rage by the publication in the Clarion of the list of newly elected officers of the local bank. Thomas Lowe had been president and director of this institution for years, and was re-elected at each annual meeting, as a matter of course. Hence the mirth which was aroused when, in printing the list of officials elected, the Clarion used blanks in the spaces where the Honorable Thomas Lowe's name should have appeared. Now, no man, however modest, is constituted to see with complacency, his name appear in print as "President, Mr. —; Director, Mr. —," least of all a man like the president of The Consolidated Land and Traction Co. He pointed out the awful thing to his son, Stewart.

"The whole town's laughing at me, for everybody knows who's meant. The devil!"

"The angel, you mean," retorted Stewart, purposely twisting the old gentleman's mean-

ing. "That girl has some spirit and some brains, and you can't make her dance as you pipe. You'd better apologize and rescind your order, or you may get a worse dose. I suspect that Billy Van and Helen know all about some deals you've made for those flowage rights, and—what's to prevent the Clarion from making that public?"

His father snorted. "How do you know all this? Pretty, isn't it, for a son to go sleuthing against his parent?"

"Careful, Dad," admonished Stewart. "I'm only telling you that you have clever people to deal with. What Billy and Helen haven't found out about you and the company, Jack

Craig has, and between them they can put the thumb-screws on you, if they choose. I thought you were slandered, and so did a little detective work on my own account, intending to refute their arguments. My investigations forced me to—to believe that the points made by the Clarion could not be—could not be denied, and well—I stopped investigating—but they haven't. I really think, Dad, that an apology to Helen—Miss Cole—would be a good diplomatic move."

It took the august president two days to determine his next move. Then he hobbled to the Clarion office.

"I see you took me literally the other day about not using my name," he smiled. "Must confess I was rather taken aback at the unique result."

"What else could I do?" was the polite query. "I had no choice."

"Well, the joke's on me," conceded the magnate. "I withdraw my embargo."

Helen's face relaxed. "I can use your name, then, even though you should have another attack of g— I beg your pardon, rheumatism?"

"Yes, but remember it's always rheumatism."

"Here is an article intended for this week's issue. You see I had omitted your name, but as you have now given me permission to use it, I shall, of course, insert your name in the proper places."

Mr. Lowe took the paper, and began to skim it rapidly. His face grew livid.

"Why, young woman, this is a confounded libel. If you dare to print that calumny, either with my name, or without, I'll sue you."

"Every word of that is true. You don't suppose I'd be fool enough to make statements which could not be proven?"

The old man marched around the room two or three times, and then came to a halt before her.

"Don't you dare to print this, miss," he exclaimed belligerently. "It will be the end of the Clarion if you do. I don't want to be hard on a woman, but print that, and it's war to the knife. I shan't stand your nonsense any more."

"Do you call this nonsense, too?" Helen handed him another piece of manuscript. This time her opponent did not grow livid, but became as white as the paper. "Where did you get your authority for that parcel of lies?"

"That parcel of *facts* was unearthed chiefly by Mr. Van. How he discovered them I don't know, but I possess proof of all the facts. Unless you give me a good reason to the contrary, I shall use these facts later. That bridge deal is not going through till people know what is back of it, if the Clarion can prevent it."

Mr. Lowe stamped around the room a few more times.

"The Bugle will be discontinued with the next issue," he said abruptly, halting before the girl.

"The Clarion seems to be ample for the field. And upon [Continued on page fourteen]

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

The standing of the company plus the integrity of the dealer determines the serviceability of the product to the consumer.

HERE we have a sterling truth for everybody connected with automobiles, either in the capacity of owner, dealer or manufacturer. It is the experience of centuries of miscellaneous business boiled down into a single axiom, and it is valuable because it expresses an economic law.

Let us see what is meant by the standing of the company. One man may say that it means financial strength. Another will be of the opinion that the engineers and designers determine the character of its product and therefore its standing. A third will say that everything else is secondary to its manufacturing facilities and experience, because correct manufacture is so vital to serviceability.

All Are Essential

THE truth is that all three are absolutely essential in developing a product of genuine merit at a reasonable cost to the user. Financial strength means a good deal more than mere prosperity. It means that the product must have received a considerable amount of recognition among users. It means purchasing power that enables the manufacturer to buy from reliable sources at advantageous prices and in sufficient quantities to insure uniformity in the raw materials. It means capacity for expansion in buildings and equipment to take care of increased business without jeopardy to any part of the product. It means the devotion of both time and money to investigating anything that offers an opportunity for improvement in any department.

Design is the union of scientific theory with common sense utility. That the finished product should work is not enough, because that is only part of the story. How efficiently it will work and at what cost is the real test. And this is a matter of development and experience. It is like a problem in mathematics—you cannot be sure of the answer until you can prove it.

The Human Element

MANUFACTURE is a question of equipment and organization. The human element looms large because of the necessity for a perfect understanding between the factory experts and the designers, and between the officials and the workmen. In this way everybody is thinking about the product and the result is the development of wonderful machinery and tools for the accurate and economical manufacture of the individual parts, and of manufacturing

systems that eliminate lost motion. The system of progressive manufacture and assembling has been developed to a surprising extent in this manner.

All this has to do with the actual production of the cars, and we now come to the second phase, the integrity of the dealer. We can hardly judge the honesty of a dealer by a dollars and cents standard. Rather, we must look upon him as the point of contact with the purchaser in a service way and judge his integrity by the manner in which he enables his owners to get the greatest productiveness from their cars. If the dealer is equipped only for the sale of cars, his value is questionable. But if he interprets service in the light in which service must necessarily be regarded by an honest dealer, and renders same to his trade, he is an asset to the company he represents and to the owners who have given him their business.

A Stable Policy

NOW we have seen the bearing of the company's standing on the quality of the finished product, and how the integrity of the dealer determines the kind of service that may be expected by the owner, which gives to even the uninitiated a safe rule by which to measure a motor car value in purchasing.

Buick officials have made a life work of the motor car industry and there is no angle of the designing, manufacturing or selling situation with which they are not constantly in touch.

Their policy has been a singularly stable one. In the early days before the motor car became a commercial necessity, the Buick Motor Company was engaged in the manufacture of Valve-in-Head Motors, and as one of the earliest pioneers in the motor car field, busied themselves in applying the Valve-in-Head principle to motors for automobile use.

A Flying Start

THE principle had already been demonstrated and they were able to commence building automobiles with a flying start. The name Buick very early became synonymous with Valve-in-Head, and Valve-in-Head with power and economy.

This eliminated the most perplexing problem at the very start. The design was a settled thing and only remained to be developed as experience might dictate in order to give the utmost in power and durability and efficiency. So the business took firm hold and increased with great rapidity as the benefits of motor cars became more widely known.

The question of marketing the cars under the right conditions was solved

and the basis for the Buick service system established. That service system as it exists today is one of which any manufacturer in the world might be justly proud. It reaches its long arms out into every nook and corner of the civilized world and is a sure source of service to every Buick owner.

For the Buick Motor Company has surrounded itself with dealers of integrity. Anybody can sell cars and pocket the profits. But it takes a real automobile dealer to render good service, and in practically all cases the Buick car is represented by the best dealer that the territory affords.

Immense stocks of Buick parts are carried in all large centers, and proportionate stocks are carried by the dealers in smaller places.

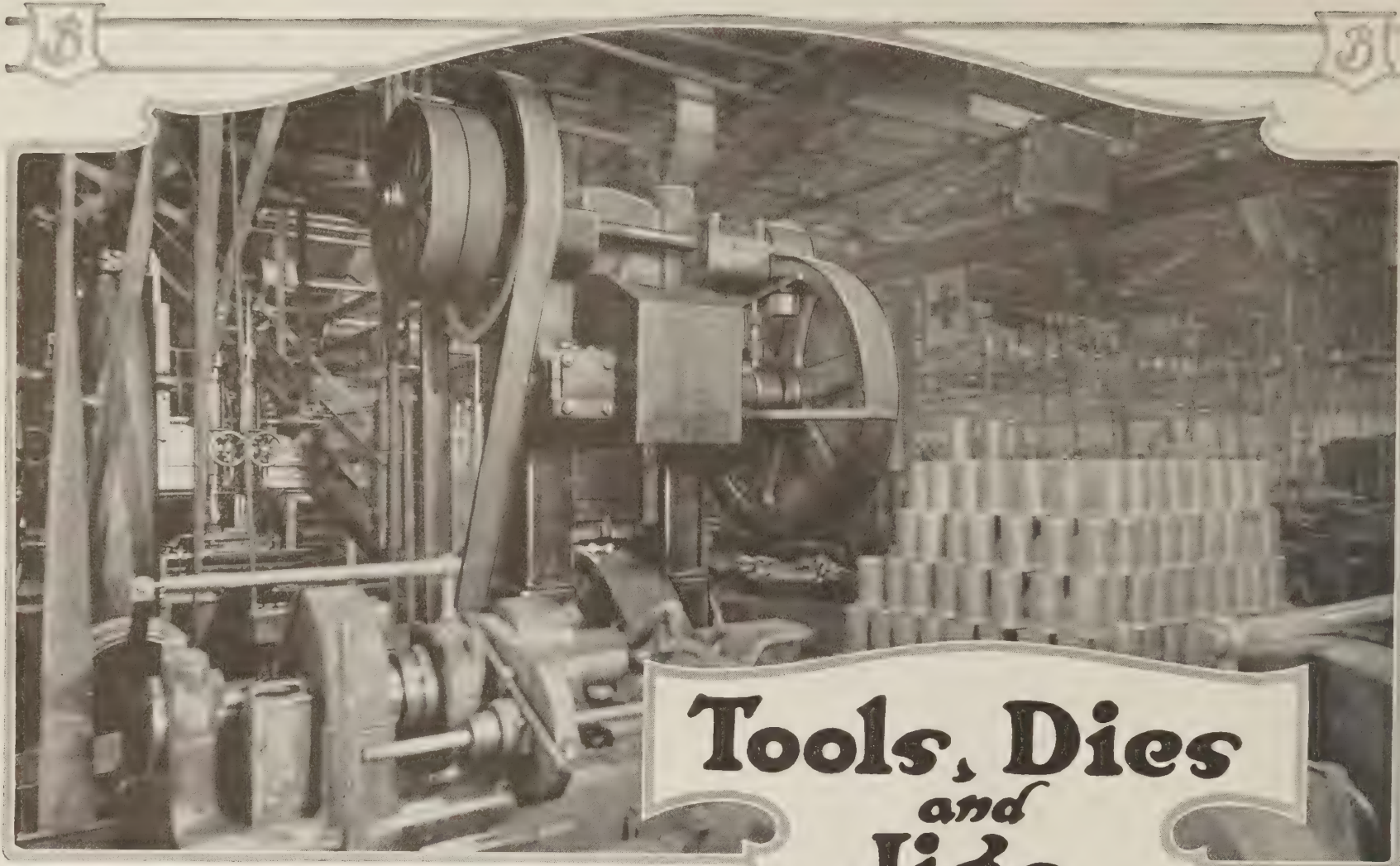
The Buick factory as it stands at present is one of the country's largest industrial plants. The investment in buildings and machinery is enormous and many thousands of skilled workmen are employed in building Buick cars. For a whole mile this factory extends along the railroad leading into Flint and every single department is a model for the efficiency expert.

How the Owner Sees It

BUICK cars and pleased Buick owners are to be found everywhere. Theirs is not the hectic enthusiasm of the tyro, but that of experienced motor car users who know what to expect from motor cars and who have learned to value the Buick for what it can do for them.

The Buick is especially popular in business circles, among that class of users who must depend upon a motor car to shorten distances and render the keeping of appointments easy and certain. It is popular with professional men, particularly those who must make a number of trips in the course of the day. It takes precedence in that varied field of busy men to whom serviceability is the first consideration, whether the product to be purchased is a motor car or any other useful business equipment.

And the Buick Motor Company is glad to have its product measured by the same rule that intelligent purchasers apply to other manufactured products of proven worth. It is justly proud of the record that stretches back for nearly twenty years into motor car history. It is proud of the dealer organization that represents it in the selling and service fields. And it is willing to rest its claim for preference on the rule which is older than any existing business institution: "The standing of the company plus the integrity of the dealer determines the serviceability of the product to the consumer."



This great press eliminates several machining operations on Buick connecting rods. The forgings are placed on the die, the powerful punch descends with a pressure of 600 tons, flattening the rods to the proper dimensions

Tools, Dies and Jigs

THERE is a phase of motor car manufacture that is not often touched upon in describing the things that are essential to excellence in the finished product; yet there is no other single feature that is of greater interest or is of more importance to the production of fine mechanical parts that will fit together with perfect precision and insure absolute interchangeability. This is the design and manufacture of tools, dies and jigs for the numberless machines in a well equipped factory.

At the Buick factory there are two departments devoted to this work. The master mechanics' department is made up of experts who are versed in every branch of manufacture and are therefore competent to design the proper equipment. The tool making department consists of a corps of high grade mechanics headed by a tool expert of long experience, who is capable of interpreting and executing the plans laid out by the designers.

When a new Buick model has been designed and tested by the engineers and the sample cars have proven by long tests that they are ready for production, the blue prints and specifications are turned over to the various manufacturing heads and plans are gotten under way for duplicating these cars in immense quantities.

A tremendous mass of detail is involved. There must be no mistakes and no delays. For when manufacture is once gotten under way all departments must begin to produce in unison, and in quantity; and when the various assemblies get to the big assembly plant they must all fit together accurately, without trouble and without the slightest alteration.

Moreover, the parts must be manufactured with the least possible waste of time or material and wherever it is practicable to perform two or more operations accurately without removing the part from the machine or the jig, the various appliances are so designed as to make this possible.

This makes it necessary for the master mechanics to work in the closest harmony with the superintendents and foremen of the various departments, in order to take advantage of their experience with similar parts in the past.

It will of course be understood that many of the tools and jigs for a new model do not differ from those used on similar previous models unless a newer and better method has been worked out, because sweeping changes are not made in Buick cars each season just for the sake of having something to talk in advertising. But the work of the designers and tool designers goes on constantly throughout the year and is

based on the most constructive methods for the improvement of the cars and their manufacture. In this way the Buick Motor Company is able to cash in on past experience to the fullest extent.

So these tools that require little or no change are soon disposed of and the work is concentrated on the new parts, which will of course require new tools, and in some cases entirely new machines. The best equipment on the market is studied and selections made with great care. Sometimes it is necessary to modify such machinery to some extent and again it is necessary to design and build the entire machine at the Buick factory because there is nothing on the market that will answer the purpose. Where large special machinery is required, experts from the manufacturers of such machinery come to the Buick plant and work out the problems in conjunction with the master mechanics.

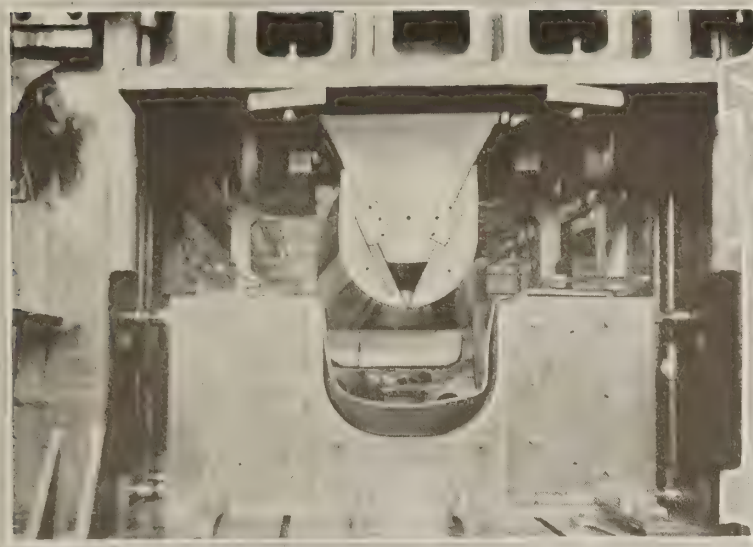
After production is gotten under way, the tool designers are continually busy in different parts of the factory, working out the more complex problems. For their constant effort is to reduce handling and to reduce spoilage, and they are never satisfied until they feel that the work is as near 100 per cent efficient as human ingenuity can make it.



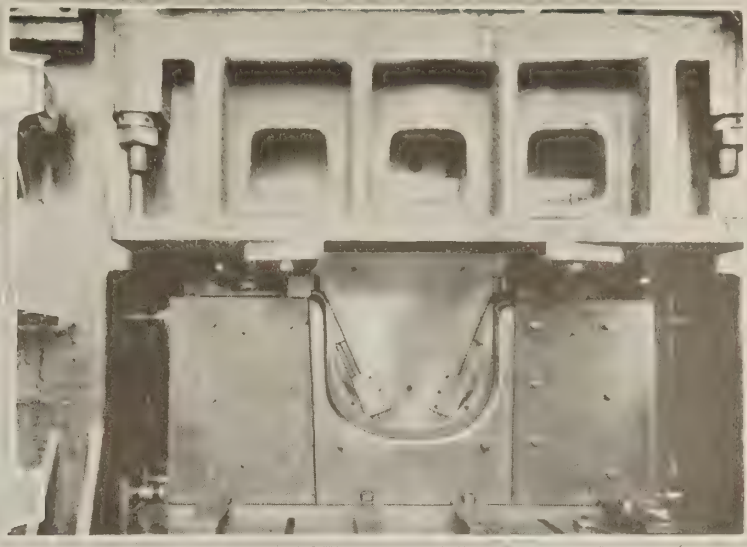
The first stage in modeling Buick gasoline tanks, with sheet metal blank in place in the form with edges flanged over



The halves of the form have molded the metal and the punch has sealed the seam. Tank is now ready for soldering



Expanding punch and great steel die for drawing the cowls of Buick bodies from sheet metal in one operation. This cut shows sheet metal in die and punch ready to descend



Punch has descended to bottom of die, expanded to full width, formed the cowl, flanged the front end, cut the door openings and punched necessary holes in the metal

To illustrate, there are several interesting operations on even so small a part as the conducting rod. After heat treatment, it has been universally customary to machine the oil dip and the piston and crank pin bosses, and this practice was formerly followed at the Buick plant. But now, as the rods come from the heat treating department, they are put into a 600-tons press between two dies and the enormous pressure does in half a second the work that otherwise requires several minutes' careful machining.

Now there are two holes that must be drilled in the rod—one for the piston pin and one for the pin on the crankshaft. To insure accuracy and to save time and spoilage, the rods are placed in a jig and the two holes drilled at once.

Six rods are then put in a fixture, the lower bearing caps cut off, the bosses milled at both ends and the oil dip cut to length—four operations without removing.

Four rods and four bearing caps are next put in what is known as a turntable jig—that is, it revolves on a turntable and presents the rods and caps alternately to the drills. Four sets of drills drill the holes in the four rods for the bearing cap bolts, when the jig reverses and the holes in the bearing caps are drilled. In this way the drills are constantly operating, because while the four rods are being worked on the operator is removing the bearing caps already drilled and putting in four fresh ones. And on account of the manner in which the work is done, perfect interchangeability is assured.

A machine has been designed and built in the Buick factory for pressing the bushings in the small end of the connecting rods. The usual practice has been to do this work by hand but the powerful machine works very much quicker.

Another ingenious device of Buick design is that for die casting the babbitt bearings right into the connecting rods and lower bearing caps. Pure babbitt metal is melted and cast under great pressure, so that the resulting bearings are entirely free from holes and imperfections and will wear much longer than bearings cast in the ordinary way.

In the piston department is a machine designed and built by the Buick tool department, for finish boring the two holes in the piston through which the wrist pin passes. It is a delicate operation and one which, if not properly done, will yield a high percentage of scrap. This means that the piston must be firmly held in position and that the drill must be perfectly rigid from start to finish. The drill is supported by a shaft running through large babbitted bearings, the point of the drill being made in the form of a smooth cylinder which passes through

the holes in the piston and enters a guide on the other side. The drill is thus firmly held at either end and works with perfect accuracy. This machine is semiautomatic and one man can turn out several thousand finished pistons daily with it. Here is a case where the Buick experts designed not only the tools and fixtures, but actually made the machine itself from the rough castings right on up.

A device of equal interest, yet entirely different from any of those just described, is the expanding punch and die which form the shroud of the Buick body in a single operation. This operation is really impressive because of the immensity of the toggle press which takes a piece of tough sheet steel and molds it like so much paper. The die alone weighs several tons and fills up a space of eight feet between the main supports of the press.

A flat sheet of metal is cut to the shape of the blank and the ends are bent over on the forming table. It is then placed on the die and as the great cog wheels commence to revolve the blank holder descends, presses the metal partly down into the die and grips the edges firmly so they cannot move. This movement also gives the shroud its preliminary shape at the rear end by an expanding motion of the blank holder. The expanding punch immediately follows, comes into contact with the stock and expands to fill the entire die less the thickness of the sheet metal.

This expanding motion is the secret and the triumph of the entire operation and makes possible in one setting of the machine what otherwise requires from three to six operations. The punch is of course made in sections, and besides forming the metal to the shape of the die it cuts the door openings and turns the flanges at the same time, as well as punching all necessary holes in the metal for body bolts.

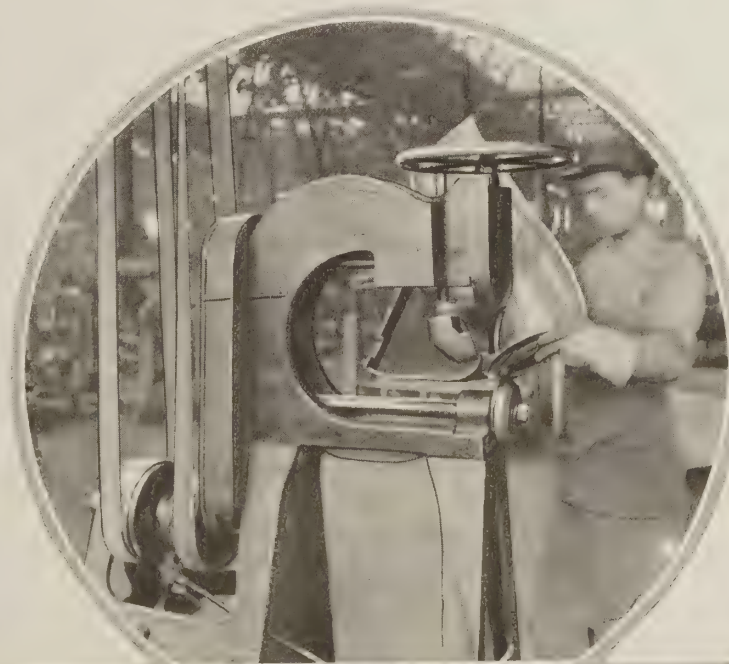
The work done by this punch and die was formerly considered impossible in one operation, because the opening through which the punch enters is smaller than the rest of the die, consequently it must expand after entering and contract to get out again. The entire apparatus was worked out by the experts in the sheet metal department of the Buick Motor Company.

In another part of the sheet metal department is an ingenious machine for making the oval gasoline tanks. This machine is also Buick designed and built. The sheet metal comes to the machine as a flat sheet of the proper size, with all necessary holes cut in it, done in one operation. The ends are then flanged over and the sheet put in the forming machine. Around the die are two formers, hinged like a clam shell, which close around the metal, press it against the die, lock the two flanges together and hold them against the die. Then a punch the length of the whole gasoline tank strikes the seam along its entire length and seals it. This operation occurs so quickly that it is difficult to tell how it is done until somebody explains it step by step. But in the three operations of cutting, flanging and forming, the results obtained are better than was possible under the old method requiring eight or nine operations.

It would be easy to go on indefinitely describing in detail the work of the tool designing department. Every department of the Buick Motor Company bears the unmistakable signs of its efforts. Its work is to take the various parts as they are specified by the engineering department and find out the best way to build them by co-operating with the officials in the manufacturing departments and profiting by their experience. They are held strictly accountable for the accuracy which is so vital in building parts for Buick cars.

All through the plant you will find the limits of variation on parts held to a fineness which the average man can hardly conceive. A limit of 1/1000 of an inch is very common, while a limit of half a thousandth of an inch is exacted on various parts of pistons, connecting rods, crankshafts, transmissions and other parts. The tool designing department must furnish machinery that will not only turn out one part, or a few hundred parts accurately, but will continue to do so throughout the year without holding up the ceaseless production stream flowing through them in each and every department.

The work of designing and building tools has developed into an exact science. It has always received the closest attention at the Buick factory and is responsible in no small degree for the high quality and moderate price of Buick cars.



This machine seams together the bodies and side pieces of Buick fenders as easily as a seamstress lays a pleat, superseding what was formerly a laborious hand operation



BUICK
EVER
VALVE-IN-

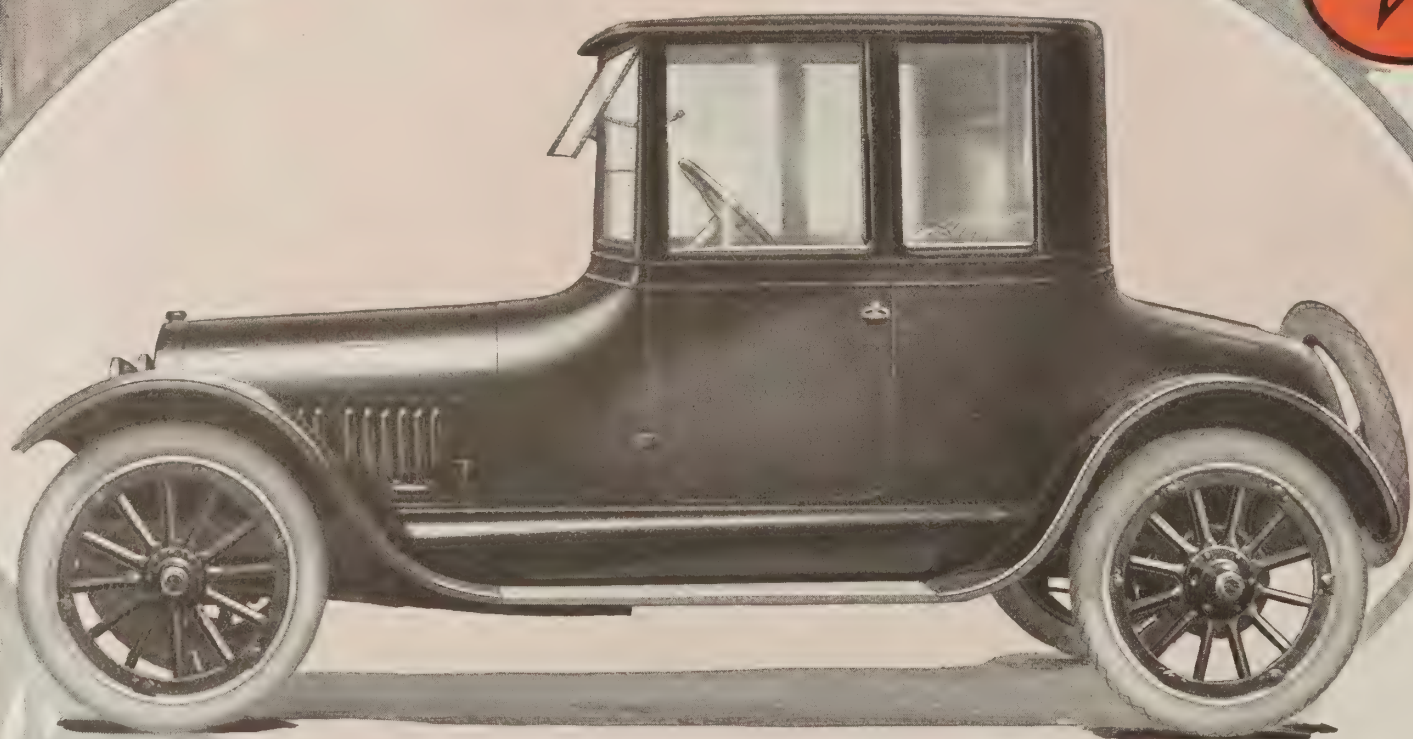
WHEN affairs turn upon the turns instinct car as a help extra action m to secure more dle a deluge of car is indispe the scope of

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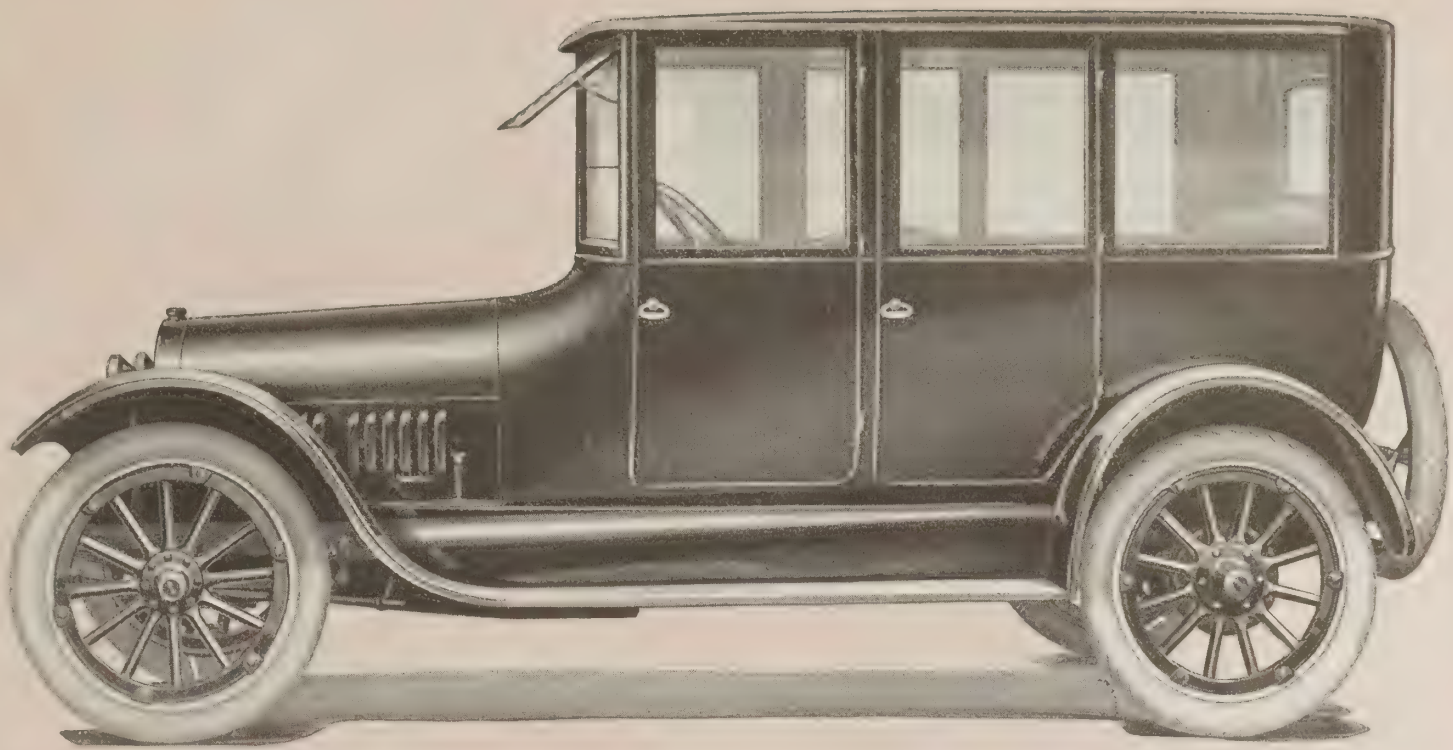
To cover the needs of this Motor Company has design models illustrated here. E Buick-built chassis and po Valve-in-Head motor.

The interiors are as caref mechanism. Their utility a been made still more desira that has been built into the



E-Six-46—3 or 4-Passenger Closed Model

Model E-Six-46 is a roomy Coupe for three or four passengers. It is ideal for continuous business or professional use, or for the small family. The interior is finished in serviceable hand buffed leather—some with rich automobile cloth.



E-Six-47—5-Passenger Closed Model

Model E-Six-47 is a four-door Sedan for five passengers. There is plenty of room in its finely finished interior and power to spare in its six-cylinder Buick Valve-in-Head motor. It is well adapted to every kind of motoring service and may be used with comfort every day in the year.



BUICK KNOWS
HEAD MEANS BUICK

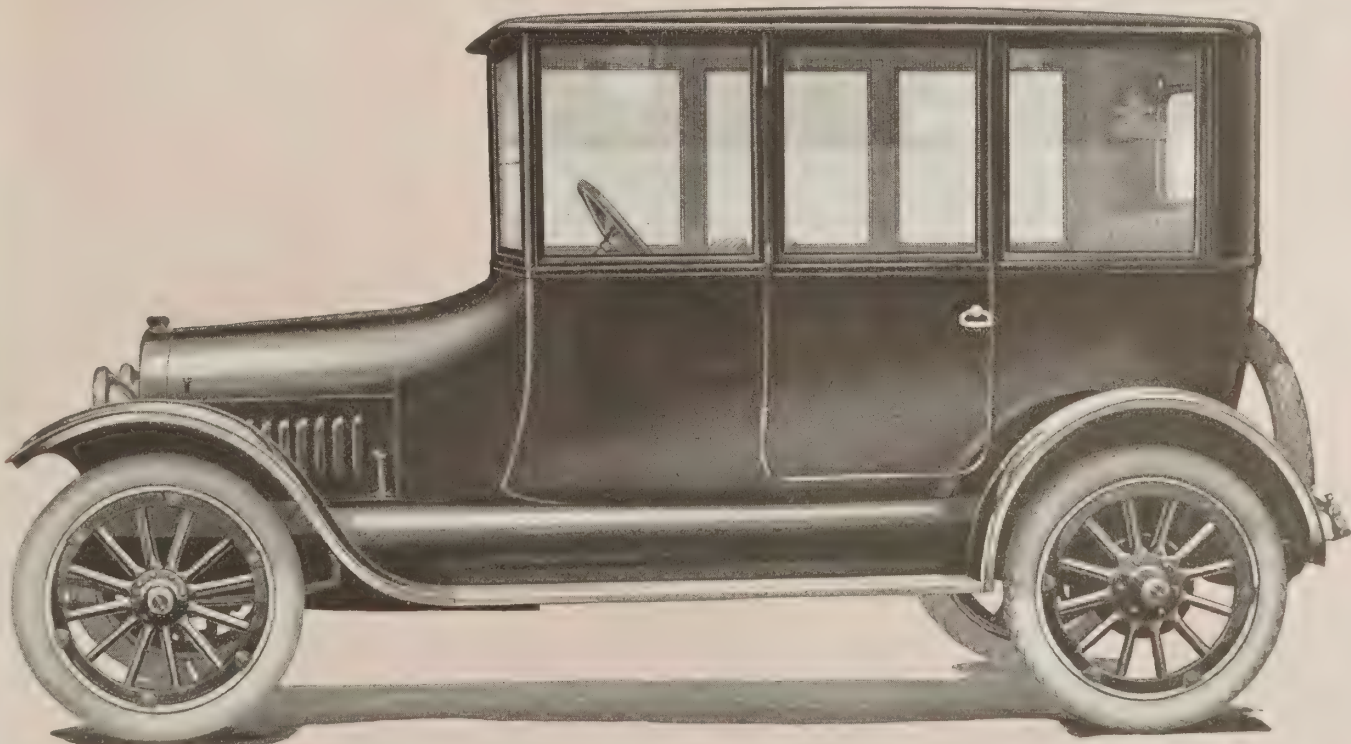
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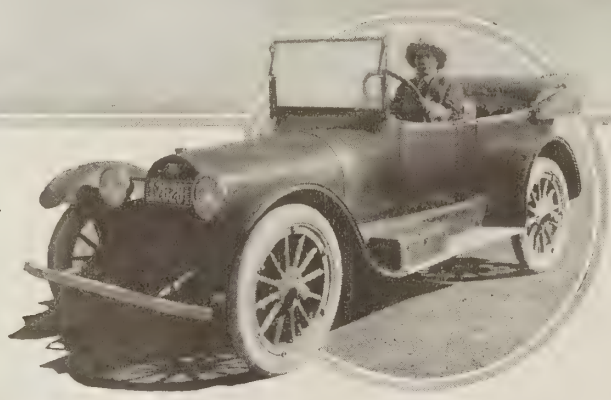
E-Four-37—5-Passenger Closed Model

Model E-Four-37 continues to hold the center of the closed car stage. It is a true Sedan model, complete in every detail and seating five with comfort. Yet it is modestly priced and its maintenance cost is small. It has solved the automobile problem for hundreds of families where but one car must serve all purposes.

Buick Valve-in-Head Folks and Doings



Buick Model D-Fours.
"Somewhere in France"



Mr. William Mazy, of Grant, Texas, drove his Buick D-Six-45 15,000 miles last year in looking after his own and two other Texas plantations. His repair bill was extremely small. The car has now been driven over 19,000 miles and has enabled two other plantation owners to cash in on Mr. Mazy's managing ability.



Here is the efficient service organization of the Standard Auto Service Co., St. Louis Buick dealers. H. G. Hurd, proprietor, is standing at the right of the picture, the third man from the right. There is not a more willing or effective service organization in the country. It is equipped to the letter with every modern convenience. A big Model E-Six-49 car has been rebuilt into the handsome service car shown and is held ready at all times to answer service calls of every description.



Eddie Waterman is one of the thousands of men from the Buick organization who are actively serving the Stars and Stripes. He is the son of G. S. Waterman, Buick dealer at Fresno, Calif., and is now in the U. S. aviation service in Italy, where this photograph was taken. Before entering the service, Mr. Waterman acquired no small reputation as a racing driver.



This Buick Model D-Six-45 was originally sold in August, 1915, and later purchased by Barney Wetzell, who is shown at the wheel. The car has been driven 52,000 miles, the engine has never been taken down and the car has a speed of 77 miles per hour. During 1917 it took first place in the half mile race at Peru, October 16; first in the 25 mile races at Sandwich, November 9th and 29th, and second in the 100 mile race at Kewanee. This record speaks eloquently for the sound construction and correct design of Buick Valve-in-Head cars, and their capacity for all kinds of service, whether on the track or in general use. Mr. Wetzell is employed by P. W. Kempster and Co., Buick dealers at Sterling, Ill.



When Miss Katherine Stinson, the daring young aviatrix, gave her exhibition January 6th for the benefit of the Sacramento Braves, the event was preceded by an automobile fashion show. Miss Stinson offered a cup for the most popular car, the award to be judged by the applause as the cars filed singly past the grandstand. The Buick Sedan, driven by the sons of J. D. Lauppe, Buick dealer at Sacramento, carried off the prize. Miss Stinson has just completed the non-stop flight from San Diego to San Francisco, the longest ever accomplished by a woman. She was escorted to the grounds by Earl Cooper, the famous racing driver, in his Buick Coupe.



"This is my fourth Buick, each succeeding car being just a trifle better." This is the comment of Dr. Wm. A. Nealon, of Pittsburgh, whose picture is shown above



"The best every-day car I ever owned," is the pointed praise of Mr. Thomas Moreland, a prominent business man of Pittsburgh, for his Buick Model E-Six-50 Sedan



Lou Wolfe and his Valve-in-Head snow plow kept Altoona, Pa., warm on more than one occasion this winter. Altoona gets its coal from the Buckhorn Mountain mine. When the road was buried in snow travel was cut off and Altoona shivered. So Mr. Wolfe placed this 600-pound plow in front of a Buick D-4 and

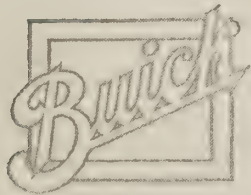
a Buick Model 16, and labored ten hours a day for two weeks during January. Mr. Wolfe is the first man to the left of the plow. The road commissioner is the man with a soft hat seated on the fender of the D-4. The ingenious outfit was always able to dispose of the big drifts successfully and keep the road cleared



Mr. James P. Kelley, treasurer of the American Steel Co., of Pittsburgh and New York, owns a seven-passenger Buick Sedan with which he is very well pleased. "My Model E-Six-50 Buick Sedan," he writes, "is rendering me splendid service and affords myself and family great comfort and satisfaction in all kinds of weather. It is a distinct pleasure to own one"



Mr. M. W. Spear, who feathers the nests of the newlyweds in Pittsburgh, is a very enthusiastic Buick owner. "My Buick Coupe," he writes, "is giving such satisfactory service that if I were without a car this would be my choice"



The really tasteful and handsome showrooms are not confined to the largest cities. Here is an interior view of the Clarksburg Auto Company's establishment, the home of the Buick in Clarksburg, W. Va. This showroom is a model for comfort and its decorative scheme is carried out very consistently. Mr. Harry P. Strum, the proprietor, has a fine record in that territory, and his success is reflected in every part of the establishment





Buffalo Business People Find



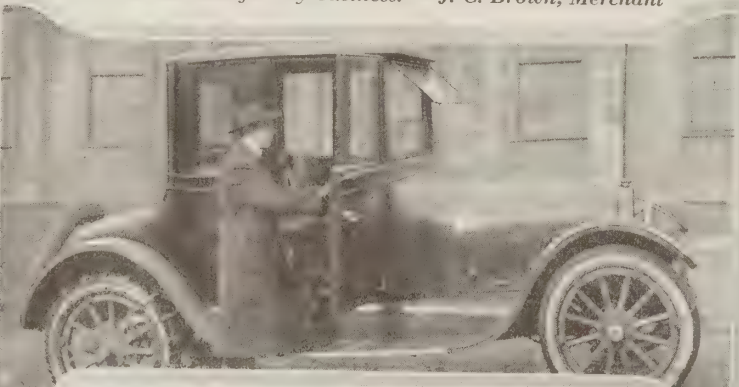
"On the coldest days my Buick Sedan has taken me to and from business in comfort."—Hubert C. Minard, Attorney



"I have owned all models of Buicks; own two now. My Sedan appeals to me as the acme of success."—M. C. Young, Merchant



"I have owned nine makes of cars, and find my Buick Sedan the best and most economical for my business."—J. C. Brown, Merchant



"I find my Buick valuable in business, and most desirable and economical to operate."—H. H. Ganson, Supt. American Car Wheel Co.



"My Buick has wonderful power, is easy riding and is just the car that suits my every purpose."—O. H. P. Champlin, Supt. Strong Steel Foundry Co.



"My new Buick Coupe has been the most valuable business asset I could wish for."—Mrs. R. T. Depew, Insurance

SIXTY-THREE men and women of Buffalo have selected Buick closed models for their business cars since last July. They represent all types of industry, capital, manufacturing, merchandising, public utilities. Individually, they recognize the necessity for a rapid and sure means of transportation in their daily operations. Collectively, they have found the closed car the satisfactory solution.

In purchasing Buick closed cars they have sacrificed nothing that any other type of car could offer them. They have the same speed, performance, economy and reliability. And they have a larger measure of comfort and adaptability.

For the closed car owner is ready for any motoring conditions. He can let in the cooling breeze or shut out the wet and cold. The interior of his car always conforms to the demands of health and comfort, at any season of the year.

These cars have all been sold by Klepfer Brothers, Buick dealers in Buffalo and Depew, New York, whose fine service methods supply the last detail in making the Buick closed models ideal from the standpoint of the man or woman of affairs.

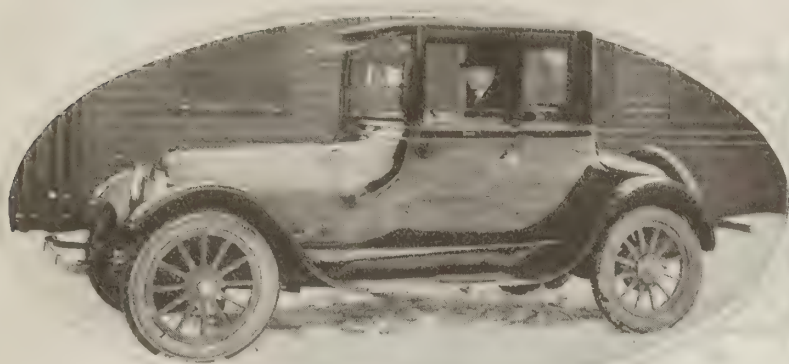


"I have had several more expensive cars, but hereafter, for business and economy, a Buick for mine."—Wm. C. Young, Chain Restaurants



Salesrooms of Klepfer Brothers, Buick dealers in Buffalo. A separate service establishment is also maintained to take care of cars

Closed Buicks Valuable Aides



"Actions speak louder than words,—I own two enclosed Buicks."—B. H. Eden, General Manager Gould Coupler Works



"I have used one, four, six and eight-cylinder cars and believe my Buick Sedan excels them all in comfort and economy. I consider my car just as essential as my medicine case."—Arthur R. Gibson, M. D.



"I own two Buicks. Have run a good many cars, but feel the Buick is the best."—C. W. Goodyear, Lumber



"I have never owned a car that gave such satisfaction from a business and comfort standpoint as my Buick Coupe."—George Stabell, Contractor



"It is the best, easiest riding, and suits all my requirements."—K. C. Evarts, Stocks and Bonds



"This is my third and best Buick. It suits me in every respect."—Benjamin Kittinger, Oil



"My Buick Coupe is satisfactory in every detail, and too much cannot be said in praise of it."—Arthur L. Hoover, Real Estate

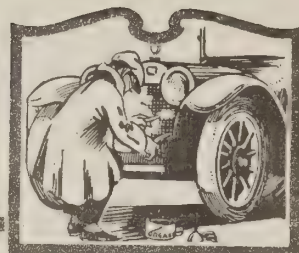


"I have always used higher priced cars, but am more than pleased with this Coupe, which is economical and satisfactory for business and all other purposes."—C. H. Williamson, Stocks and Bonds



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Squeaks

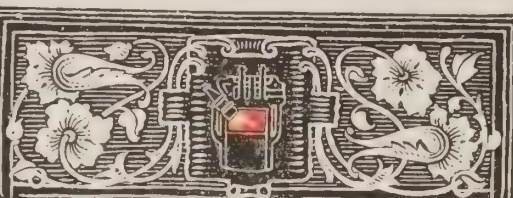
AMONG the minor ailments that sometimes develop in motor cars may be numbered body squeaks. They have nothing to do with the running of the car and are not of frequent occurrence, and being easily removed they need cause no annoyance.

Body squeaks are the result of the racking and straining of the car due to driving over rough roads or streets continually, or to any other use that will cause the chassis to jerk and tug at the body bolts.

Buick bodies are very securely fastened to the chassis by means of the body bolts, which pass down through the frame of the car. These bolts are of generous size and are tightened firmly before the car leaves the factory. As an additional precaution, "shims" or strips of felt, are placed between the body and the metal frame of the car, to prevent actual contact and do away with squeaks that otherwise might occur after a certain amount of use.

Should squeaks of any kind develop in the Buick body they may be eliminated by simply tightening the body bolts with a good sized wrench, which will draw the body down firmly in position again.

In case this does not entirely cure the squeak, it is advisable to drive the car to the nearest Buick dealer because it may be that the felt



THE Buick Valve-in-Head motor directs all the power downward, against the piston head. It has no valve pockets.

It has less water-jacketed space than any other type of motor.

It clears itself quickly and completely of dead gases after each power stroke.

It is the most efficient and powerful of gasoline motors.

has become worn away in places by the constant rubbing due to the loose bolts and needs replacing. A new felt shim will remove the most obstinate squeak entirely.

The development of squeaks may be largely prevented by inspecting the body bolts from time to time when lubricating the car to see that they are drawn up good and snug against the lock washers. Squeaks in the windshield may also be prevented in the same manner. If a squeak develops in the hood over the engine, look to see if the belt lacing on the radiator shell and body cowl is worn out. If so, some new belt lacing may be put in in a very few minutes, preventing the hood from coming in contact with other metal.

Dixie Owner Enthusiastic

IN JUNE of last year," says Mr. Charles A. Weaver, of Moundsville, W. Va., "I purchased through the Trimble & Johnson Co., of this place, a Buick E-Six-49.

"I have driven it almost 4,000 miles and have not had one bit of trouble, and can run anywhere from one mile an hour to sixty or more.

"She sure is some car and if anyone has a better one I haven't seen it, but have seen hundreds that cannot compare with it. My great satisfaction prompted me to write you."

BUICKS GIVE LONG SERVICE AT LOW COST

A Wealth of Power

I HAVE had my Buick Light Six for fourteen months and driven it 19,000 miles," writes Mr. J. O. Cass, of San Benito, Texas, "and never yet have I been in a position to use all of its power. On one occasion I used it to move a threshing machine weighing 2400 pounds over rough country roads for 26 miles with perfect ease in high, throttled down to four miles per hour."

Drove Buick for Eight Years

MR. WILSON E. REAMS, vice president of Jones Bros. & Co., Inc., Richmond, Va., is a seasoned Buick owner. Under date of December 29th, he wrote: "After driving a Model 10 Buick for eight years, with some reluctance I was persuaded to sell it. Am now driving a Model E-Six-45 and the pleasure and satisfaction in driving the 'Little Six' is beyond my description. Would like to send you a photo of the little Model 10—we loved her like one of the family.

"I enjoy the Buick Bulletin a great deal—get lots of information from it."

Auto Expert Lauds Buick

IT IS a pleasure for me," says Mr. C. J. Quick, of Pulaski, N. Y., "to say that with my 14 years of experience as demonstrator for several makes of cars as well as owner of several makes, I never have turned a steering wheel on a car that has given such great satisfaction as the Little Six 1917 Buick Roadster has done for me during this last season."

Nebraska Man Glad He Waited

THE fifth Buick car owned by Mr. A. M. Davis, of Lincoln, Neb., is the first Buick Model E-Six-50 seven-passenger Sedan delivered in the Lincoln territory. This car was sold to Mr. Davis in May, 1917, and delivery was not made until sometime in August. However, Mr. Davis was patient and knew he was getting a good car, and was glad he waited this length of time although it was quite inconvenient." NEBRASKA BUICK AUTO CO. Lincoln, Neb.

New Car Makes Hard Trip

MR. L. A. HOOP, of Udall, Kas., drove a Buick Model E-Six-49 from Kansas City to Udall, a distance of 263 miles. "We used about 13 gallons of gasoline," he writes, "which we consider rather remarkable, driving against a head wind with top up and a new car. Less than a quart of water was consumed on the trip and about the same amount of oil. Made the trip in 12½ hours driving, but had a lot of rough and newly worked roads to contend with, which gave us a low average of speed.

"We struck nothing too hard for the Buick to perform on high on the whole trip."

Never Stops on the Road

MR. J. EDW. JACKSON, of Malmo, Neb., writes as follows: "I have driven my Model D-Six-45 Touring Car for two years and in that time have traveled something over 6700 miles with the same tires, having never had a blowout and only three punctures. I never had to stop on the road. I make 16 miles to the gallon of gasoline in these hills, so can say the Buick is as dear to my heart as the 'Old Oaken Bucket'."

A CHIP OF THE OLD BLOCK

Continued from page four

further consideration, I think the directors of our company will abandon that bridge project. Perhaps, on the whole, the company has been somewhat short-sighted in attempting to put that project through at this time."

"We've thought so in this office for a good while," blandly returned Helen. "It is a pleasure to know you have reached the same conclusion."

Mr. Lowe smiled grimly, "I must go," he said, ignoring her pleasantry but extending his hand. "Good morning."

"Oh, one more minute," cried the girl with a blush. "I've another advance piece of news for you—now," and she handed him another piece of copy.

This time the old gentleman reddened, then a broad grin overspread his features. "This looks as though you've corralled the whole family," he remarked. "And so you're going to marry Stewart, the young scamp. He's a lucky dog. Well, I'm sure he'll have a wife who'll keep him in order."

"Do you like this last move of mine better than the others?" asked Helen almost wistfully.

"I admire your good taste," replied the old gentleman, gallantly. "I admire a person who puts up a good fight for his principles and his rights. You've certainly done that and since I have been beaten, I'm glad that it was by one of the family, as it were."



W.S.S.
WAR SAVINGS STAMPS
ISSUED BY THE
UNITED STATES
GOVERNMENT

Serve by Saving

Start a small but effective campaign of your own to back up the big campaign that is going to win the war. Every week invest a certain amount in War Savings Stamps or Thrift Stamps. It's a patriotic duty for every member of every American family.

For sale at Postoffices, Banks, Trust Companies, all Buick Salesrooms and Other Agencies



Buick

EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK

AMONG its myriad other uses, the motor car acts as a connecting link between the various conveniences that form the machinery of modern business. It helps to unify the activities of the railroads, the tractors, the telephones, the reapers, in developing the productive ability of the individual and the nation.

Nearly a score of years spent in the development of the Valve-in-Head principle have fitted Buick cars for the important part they are filling in the industrial world today. And side by side with the engineering achievements have been developed those niceties of manufacture that result from ripened experience and sincere effort.

Thus the seasoned motorist favors the Buick. He likes its sleek trimness. He prides himself on its power and performance. And he needs its unfailing serviceability in his daily occupation.

The Buick line is a broad one, composed of both open and closed models for from two to seven passengers. It contains a car for every kind of motoring service.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

PIONEER BUILDERS OF VALVE-IN-HEAD MOTOR CARS

BRANCHES IN ALL PRINCIPAL CITIES. DEALERS EVERYWHERE



Buick

EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK

SO WIDELY has the Buick name come to be accepted as marking the highest standards of motor car construction that there is a national demand for a Buick for every phase of motor car use.

In this day of conservative and careful utilization of every resource the ownership of a Buick is of added importance. Its fine service and economy in upkeep have earned it a place as an economic necessity.

You will find a Buick adapted to your particular needs in the line of nine models of Fours and Sixes in various sizes of roadsters, touring cars, coupes and sedans, all powered with the famous Buick Valve-in-Head motor.

Illustrations and descriptions of these various cars are incorporated in our new catalogue which will be sent upon request

BUICK MOTOR COMPANY

Pioneer Builders of Valve-in-Head Motor Cars

Main Office and Factory

FLINT, MICHIGAN

Branches in all Principal Cities: Dealers Everywhere

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THE *Buick* BULLETIN

Published by the Sales Department
of the Buick Motor Company

APRIL 1918

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In This Number—*The Advantages of the Closed Car in Summer*—Page 11



The Cloud

"And when sunset may breathe from the lit sea beneath
Its ardours of rest and of love,
And the crimson pall of eve may fall
From the depth of heaven above,
With wings folded I rest, on mine airy nest,
As still as a brooding dove."

—Shelley

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E.T. Strong Managing Editor

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Number Four

PURPLE ASTERS By J. H. BUCK

Illustrations by James Perry

TO the casual villagers he was a queer sort; to the few worth-while residents who had managed a speaking acquaintance he was a wonder; to only one person in Cortland was he a real, live, understanding, lovable human.

The casual considered him queer because he preferred the society of his garden and his writings to that of the witty crowd that decorated the front steps of the post office and drug store; the few who dubbed him a wonder were those who knew of his standing in the world of letters and looked upon him with awed admiration; it was the little boy beyond the hedge, who knew nothing of his reputation—or cared—that discovered in him the most delightful companion of his lonely childhood.

He hadn't looked exactly promising as a playmate when the little boy first saw him coming up the walk surrounded by boxes and bags, a cap pulled over his eyes and an evil looking bull terrier at his heels. But seen the next day, capless, coatless and dogless, punching a spading fork into the stubborn soil of the long-neglected garden, he appeared much less formidable. So very much less, indeed, that the little boy walked quite close to his own side of the hedge, and, after peering silently over, essayed a timid greeting:

"Beans or taters?" he asked politely.

The man paused to locate the voice. He smiled when he saw the round little face with the big interested eyes.

"Neither," replied he. "Asters."

"Oh, I know them. They're flowers, ain't they? Aunt Myrtle used to have 'em."

"Yes," said the man softly, "the most beautiful flowers in the world."

"Humph! I don't think so. I like roses and—poppies—and flowers that's red."

The man smiled again, as he tossed up another shower of clods.

"Awful hard work, ain't it?" inquired the small neighbor. "Do you get money for doing things like that?"

"Not much," said the man. "Just satisfaction and near-happiness sometimes."

This was over the head of his listener, who made no immediate reply. Instead he walked along the hedge for a few yards in search of a tiny gap that he remembered. He found it, and parting the branches, squeezed his thin little body halfway through the aperture.

"Maybe I could help you," he suggested, shyly hopeful. "I can do lots of things."

The toiler dropped his spade and laughed gaily. "Why, of course you can," he cried. "I believe you're just the man I need to help me



So on the day of the anniversary the man rose early and took with him to the garden a great pair of scissors and a monster basket

clean up these weeds along the path." At which the remaining half of the diminutive applicant appeared. Simultaneously there appeared on the front porch of the house where he belonged a stout, elderly woman, who began to call: "John—Oh-o John," scanning the lawn and street meanwhile.

"Gosh." The little boy stopped in a panic. "I forgot I'm not to leave the place today."

He stooped a trifle, to hide from the woman's view his tousled head, then slipping through the shrubbery with a swiftness evidently born of experience, threw himself on the grass of his own lawn in a pose of elaborate innocence. "John, John."

"Yes'm. Here I am, Aunt Myrtle," came the reply.

The aunt turned her eyes in his direction.

"Where? Oh, I see you. What on earth are you doing on that damp ground? Come in and wash your hands for lunch."

The next minute the door closed upon her retreating figure.

"Whew," said the culprit, with a sheepish grin. "Like to caught me."

He got to his feet and started toward the house.

"See you later," he called over his shoulder to the new neighbor. "I think I'm going to like you."

The man watched him until he turned the corner of the house, an odd expression on his face. Then he sighed and drove the spading fork deeper into the weed-grown earth.

The tiny gap that had been in the dividing hedge on the man's arrival had, as a result of frequent usage, now become a stragglingly frank, if somewhat unusual, gateway.

The days didn't seem to start off just right until after the little boy had paid his morning visit. And as regularly as the day came there also came the little boy.

There were times, to be sure, when his aunt had, as a method of punishment, forbidden him to leave the house, but she had reckoned not with his ability to quit his place of confinement via the friendly route of the second floor window and the wistaria vine. Naturally the man did not approve of this disobedience, nor yet could he scold the guilty caller as he doubtless should have. Already the little boy had found a place in the sparsely tenanted chambers of his heart of which the man himself was unaware.

On days when the weather would permit the two would weed, water and care for the aster bed, now a stretch of shining green. On mornings of rain and dampness they would play checkers and tell stories

in the cozy, book-filled den.

As a rule the man had always devoted the mornings to his writing, but as the little boy had these hours for leisure, going to lessons afternoons, the man accordingly switched his program to meet these requirements and found, somewhat to his amazement, that he

could write better than ever before. If the little boy was a pleasurable wonder to the man, the man himself was no less an enjoyable puzzle to the boy. Youth likes to clothe its idols in garments of mystery, and the little boy had fancied him anything from the exiled prince of his favorite story to a good fairy in disguise—everything but what he really was—a lonely, disillusioned, heart-heavy pilgrim.

One day he had surprised him staring intently at the portrait of a lovely girl in a silver frame, and upon questioning, the man had started and thrust it hastily back into a dark corner of his desk.

"Was it your mother?" asked the little boy anxiously.

"No," said the man in a strange, hard voice. "Not my mother."

"Haven't you any either?"

"No, little boy." And because of their common loss, the man stooped and put his arms about the tousled haired comrade. Years ago he had dreamed wild dreams of some day holding his own little son just like this.

He rose and led the child to the window.

"Ah," he exclaimed, forcing a note of joy into his voice, "there's the sun, pardner. Let's take a peep at the flowers."

The summer passed. A summer of long, sunshiny days and starlit nights—days made happy by the visits of the little boy, nights made bearable by the memory of them.

The aster bed was a budding, half-blooming mass of purple sweetness. Another week and the flowers would be at the zenith of their beauty, at which time the man would cut them all, fill great vases and bowls with them and for a day forget everything but the past with its happiness and its hopes.

Unfailingly he kept this anniversary, with its mute offering of aster-bloom, to the memory of a lovely girl with purplish eyes and an autumn birthday—a girl who hadn't cared.

So on the day of the anniversary the man rose early and took with him to the garden a great pair of scissors and a monster basket. But he needed neither. The bed that yesterday had been a thing of almost unbelievable loveliness this morning was a tangle of torn plants and shattered petals. The majority of the flowers had been taken. Only one remained intact—a rarely wonderful specimen over which the man had kept jealous watch.

For a full minute he stood in rigid amazement. Waves of anger and disappointment surged over him. Why should he, after all the other bitter disillusionments of life, be deprived of this one day for which he lived? He stooped and cut the single perfect blossom that stood straight under the morning sunshine like a surviving general amid his fallen troops. Then gathering up the pitiful remaining blooms, he went slowly back to the house. He placed the one great aster in a tall vase by the side of the silver framed portrait which today occupied the center of the mantel. The rest he put in a low bowl for his reading table.

Then he opened a package of yellowed letters and read them for the hundredth time; he pondered long over the recollections evoked by the fragrance of a lavender handkerchief; his eyes grew misty as he turned the pages of a much penciled and oft-handled volume of

poetry. Yet with all these usual ceremonies the morning lagged. The little boy had not come today.

It was late afternoon before the eager eyes of the man were rewarded by the sight of a slender little figure, clad in a long white nightgown, squeezing itself through the gap. After glancing furtively about, the little boy came across the lawn to the steps of the side porch where the man sat behind the vines. The man would have smiled at the unusual garb—the symbol of shame—had not the injured eyes of the child forbidden. Very, very slowly the little boy mounted the steps, one hand clutching the folds of the hated nightgown to prevent his tripping up, the other closed over a note. Without a word he handed the folded sheet to the astonished man and stood like a

flowers wasting their sweetness on the garden air—the birthday of a dimly remembered mother—an unadorned grave in the little churchyard.

The man reached out his long arms and caught the little boy to him.

"Was today your mother's birthday?"

"Yes. Aunt Myrtle told me a long time ago and I always remembered."

What a coincidence, thought the man, that both he and the little boy should hold for loved ones the same memorial. A pause. Then:

"Are you much mad?" inquired the voice of the little boy weakly. "I'm sorrier than most anything I done it, but I didn't think stealing—"

"It wasn't," interrupted the man. "Don't you know I always told you the flowers were yours and mine together? Surely you were entitled to your part."

"I took more'n my part, though. I was piggish. But I left you the big old General Aster. Did you find him?"

"Yes—and you mustn't think I'm angry. I'm not at all." He gave one tear-streaked cheek a pinch to prove it.

"Now run home, tell Aunt Myrtle everything is alright and ask her if you may put on your clothes and take me to—to the cemetery."

The little face beamed happily at the vindication, and he disappeared in a flying streak of white. The man waited until he saw the small hand give a signal of readiness from an upper window, then got his cap and joined the little neighbor at the street gate.

Almost silently they made the journey down the long maple-bordered avenue and

up the hill to the peaceful city of the sleeping.

The little boy stopped before a plot containing two aster-carpeted mounds.

"I had more'n enough for her's," he said simply, "so I put some on the other. It's not his birthday, of course, but he was my father, and I guess it wasn't his fault that he didn't stay to look out for me."

The man scarcely heard him. His eyes were fixed upon the carving of the marble headstones. On one: Mary Elizabeth Gray, wife of Stephen Langhorn, born—

"God," he cried, suddenly, gripping the arm of the little boy almost fiercely. It was the name of the girl in the silver frame.

"What's the matter?" asked the little boy gently. "Does it make you sorry to come here?"

"Yes." And turning away, he started blindly toward the gate.

"Goodbye," said the little boy when they had reached home again. "I ain't never going to do anything like that again—never."

"I know it, but it's all over now and it's alright. Next year we're going to have a bigger bed, and you shall have them all for your memorial."

The eyes of the little boy shone joyously.

"Oh, goody. You're the best sport I ever saw."

The man, left alone, gave a great sigh—a sigh in which all the pent-up longing of the years seemed to find expression. On the next lawn the little boy that might have been his scampered away, straight into the orange heart of the setting sun.



Almost silently they made the journey down the long maple-bordered avenue

condemned prisoner awaiting his sentence. "My dear Mr. Lane:

"John has been very naughty today—in fact, I hardly know what you will think when he explains, as I have told him he must. However, I want to assure you that I am sincerely sorry, and if there is any way in which I can ever repay you, I would be glad to know."

"MYRTLE LANGHORN."

"Why, I don't understand," said the man. "What have you done, little boy?"

Whereupon the little boy burst into tears and rubbed a grimy fist across one eye.

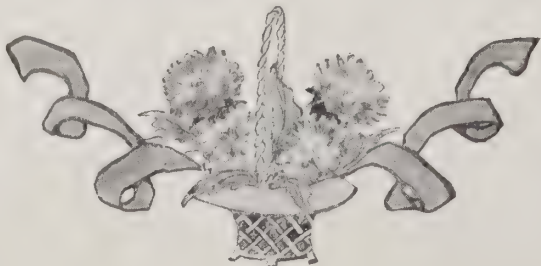
"I—I stole your asters," he sobbed. "That's what I done. I slipped over before you got out and tore your bed all up."

The eyes of the man were stern.

"John," he said. Just that one word, but it hurt the little boy more than the combined effect of all the punishments Aunt Myrtle had ever administered.

"Oh, don't look at me like that," he begged. "Don't say 'John' like that. Let me tell you about it."

And with many sobbing pauses the story was told. It was a simple one. The lovely bed of



CURRENT COMMENT

By E. T. STRONG--General Sales Manager

ONE of the big tests of an industrial organization is its dealers. Being men of experience and familiar with what the public needs and demands, the dealers will naturally gravitate toward the company that is most successful in supplying the public's requirements.

So it is with no little pride that the Buick Motor Company points to the solid front presented by its present dealer organization.

It takes many years to build up a really fine dealer organization. Really good dealers are none too numerous. And those who have developed by reason of their experience and close study of conditions in their territories, are inclined to sit steady in the industrial boat and follow the course that has already brought them success.

The fluctuating dealer earns no recognition from the local banker, nor does he build up a clientele of satisfied customers who will be an asset to him in the years to come. He is utterly unable to cash in on the cumulative benefits accruing from the cars he sold in previous seasons, because by taking on other lines of cars he has automatically divorced himself from his former customers.

The seasoned motor car dealer is a stand-patter. His loyalty is not of that blind description born of party spirit, but is based on purely common-sense business reasons.

Selecting the Right Car

IT goes without saying that the dealer must be a good judge of motor cars, and of motor car values. The selection of the right car to handle is the most important decision he has to make, for upon this selection his whole future rests. The mere invitation to "come again" is not sufficient to bring his customers back when they are again in the market. They will return of their own accord if they get the right kind of service from their cars and the right kind of attention from the dealer.

This is the meat of the whole situation.

A dealer goes into business to make money, the same as any other business man. He markets his cars in a certain territory. He gets a certain commission from the sale of the cars. The less trouble the cars are to him in a service way, the less they will cost him to maintain and the more his standing will grow in that community.

So it behooves the dealer to represent the very best make of automobiles that he can effect a connection with. His reputation will never exceed that of the car he represents, and his effort should be to handle the car that will give him the greatest prestige with the greatest number of buyers and the least trouble to his owners and himself.

In other words, when his name is mentioned in his community, it is not sufficient that people should connect it with automobiles. To be of real, substantial benefit to him in a business way, people should connect his name with a certain make of automobiles. Then whatever prestige attaches to that make of automobiles is naturally reflected favorably on him and his place of business, and this prestige will grow and grow as the car becomes better known in his territory.

Building Up Prestige

NOW, just as it takes a dealer years to build up his business on a permanent footing, so does it require years of consistent effort to make the name of a motor car stand for something more than a mere motor car. It is not a question of publicity. By the liberal use of printer's ink and other advertising, it is quite possible to make the name of most any product familiar all over the country. In the same manner it is easy to select certain features of any product and make them the objects of curiosity among many thousands of people.

But getting right down to brass tacks, actual service in the hands of owners for a reasonable period of years is the only thing that will bring out the real merits of any product in a way that will be convincing to buyers.

This is especially true of motor cars, first because they are too expensive to experiment with, and second because they must give more and harder service than any other kind of transportation equipment.

The policy of the Buick Motor Company has always been to follow the same conservative course. In designing and manufacturing we have made the term Valve-in-Head synonymous with Buick for nearly twenty years. And in advertising we have dwelt upon those points of construction which make Buick cars proof against even the most strenuous kind of motoring service, and most useful for business, professional and general use.

So wherever the name Buick is mentioned in motor car circles, whether among dealers or owners, it stands for certain important things. To the owner it means great serviceability, with freedom from needless annoyance and expense. To the dealer it means a wonderfully satisfactory car to represent because it is easy to sell and gives no trouble from a service standpoint.

Dealer Progress

THIS is why the Buick dealer organization has kept even pace with the remarkable development of the company itself. Thousands of dealers handle Buick cars in thousands of cities

and towns in the United States. And in a big majority of cases, they have represented the Buick line for a number of years.

They know the Buick car and what it will do. They are fully alive to their responsibility, as reputable dealers, of standing behind the cars they offer for sale. And this very fact has impelled the greater number of them to confine their activities to Buick cars alone.

It simplifies their whole method of doing business and increases their ability to render prompt and efficient service. It relieves them of the embarrassment occasioned by customers asking them to compare the Buick Valve-in-Head with motors of other manufacturers they might be handling. It eliminates the confusion arising from having the salesmen in their showrooms presenting conflicting selling arguments to customers. It makes the newspaper advertising really forceful and convincing.

Nine carefully designed Buick models this year—including four closed cars—provide amply for every kind of motoring service, with plenty of latitude for individual selection.

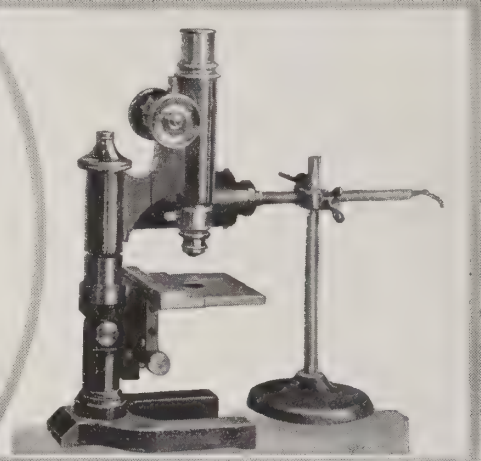
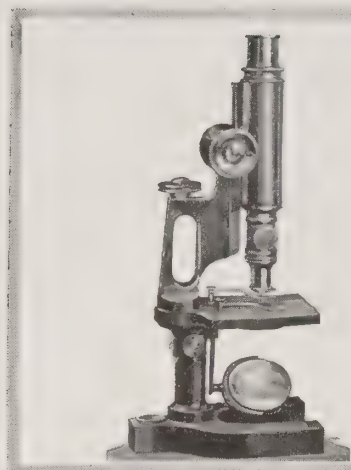
Reputation a Great Asset

THE distribution of cars is handled in the most equitable manner. It is true that Buick dealers do not get as many Buick cars as they could sell in the course of the year. In fact, it has been impossible to keep the production up to the demand. However, this is a condition that reflects nothing but credit on the Buick car and proves its great value both to dealers and owners.

During nearly twenty years the Buick reputation has been constantly growing and Buick sales have grown with it. There is no "missionary" work necessary on the part of the Buick dealer, because almost every motorist is already familiar with the Buick if he does not actually own one. So that while Buick sales have reached wonderful proportions there is no question but that each succeeding season is bound to see them mount higher as the Company's manufacturing facilities can be increased.

This is building for the future. And the far-sighted Buick dealers are building for the future in the same way. They are concentrating on sales and service for Buick cars, and bringing every pressure to bear that will equip themselves to do full justice to both. They are casting aside everything that will interfere in any way with successfully covering their territories and linking their names inseparably with that of the car in which they so firmly believe, and in making both names all that the customer can ask in the way of good value and excellent service.

The Buick Testing Laboratories



ATREMENDOUS amount of interest attaches to the scientific side of motor car designing and building, and nowhere is this interest more keenly impressive than in the chemical and physical laboratories. At the Buick factory, every substance that is used in the manufacture of Buick cars, from the coal used in the furnaces to the steel in nuts and bolts, must run the gauntlet of a most formidable array of scientific testing devices.

There are great mechanical giants that twist the drop forged axles into shapeless masses. There are furnaces that turn the carbon in steel into gases. There are scales so delicate they can weigh the carbon in those gases. There are moving picture machines that photograph the strength and the regularity of the current used by the ignition apparatus in action. There are microscopes, stills and mysterious trappings of the chemist's lore, and the air is filled with pungent fumes and odors.

This work is divided into four separate departments—the chemical laboratory, the physical laboratory, the metallurgical laboratory and the electrical laboratory. Both testing and research work is carried on throughout the year, to check up the material before it goes to the manufacturing departments and to assist the engineers in determining the best materials to use in parts for future models.

Nothing could be more thoroughly practical than the work of these analytical experts. They provide an absolute check on every lot of material purchased by the Buick factory and safeguard the interests of every purchaser of a Buick car.

The Chemical Laboratory

IN the chemical laboratory is a staff of graduate chemists whose duty it is to analyze every material that will respond accurately to chemical analysis. For example, the engineers' specifications for connecting rods call for steel

with a certain percentage of carbon, and no variation in this carbon content is permissible. Before any of this material is allowed to enter into the construction of Buick cars, the chemists take a small quantity of filings from it, weigh them carefully on one of the sensitive scales mentioned above and place them in an air tight furnace.

Connected with the furnace by a series of tubes and glass apparatus is a tank of oxygen. The oxygen, passing through the system is washed and dried thoroughly and then enters the furnace, where the carbon is oxidized to a gas by the intense heat. This gas then passes through a certain chemical in a bulb where it is absorbed. The weight of the bulb containing this chemical has previously been taken, and after the carbon gas has been absorbed the whole is again weighed with great care. The increased weight will, of course, show the amount of carbon absorbed, and by comparing this with the weight of the filings placed in the furnace the percentage of carbon in the steel is easily determined.

Countless other raw and finished materials, such as iron, brass, bronze and bearing metal, are tested in an equally thorough manner.

The Physical Laboratory

IN the physical laboratory the character of the work differs, but the results obtained are just as vital. Finished parts of every description are brought here and tested until a "failure" or breakage, occurs. The object of these tests is not to establish the fact that Buick parts can be broken, but rather to determine exactly how much force or vibration is required to break them. The tests exactly duplicate the stresses to which the parts are subjected in actual service, and are then continued

on to a point where the metal is no longer able to stand the terrific force applied.

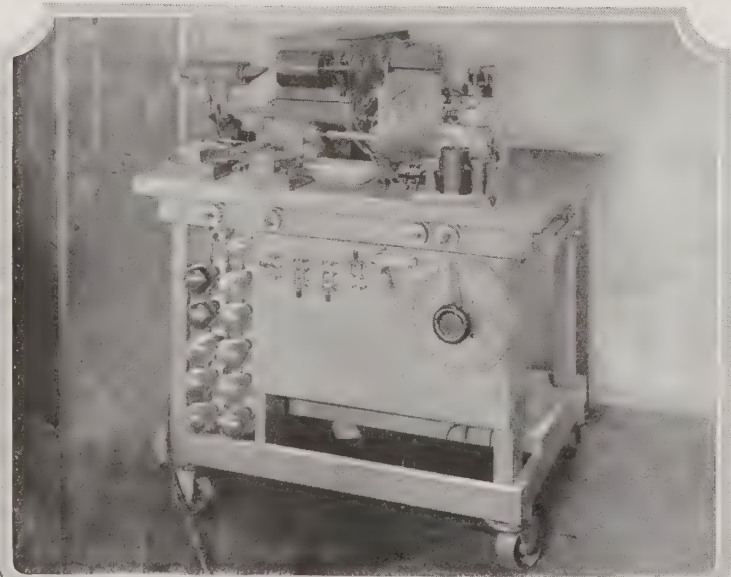
Two really wonderful machines are used to test tensile strength (straight, steady pull), compressional strength (steady pressure) and transverse strength (pressure in the center with both ends supported).

To illustrate: A connecting rod bolt, with its nut, is placed in a fixture in the machine and the stretching operation commenced. As the strain increases it is measured by a scale attached to the machine, the operator keeping the beam balanced constantly and watching the steadily mounting finger on the dial. After a time the bolt snaps and the point at which the failure occurred is carefully recorded and a report made out to the engineering and manufacturing departments.

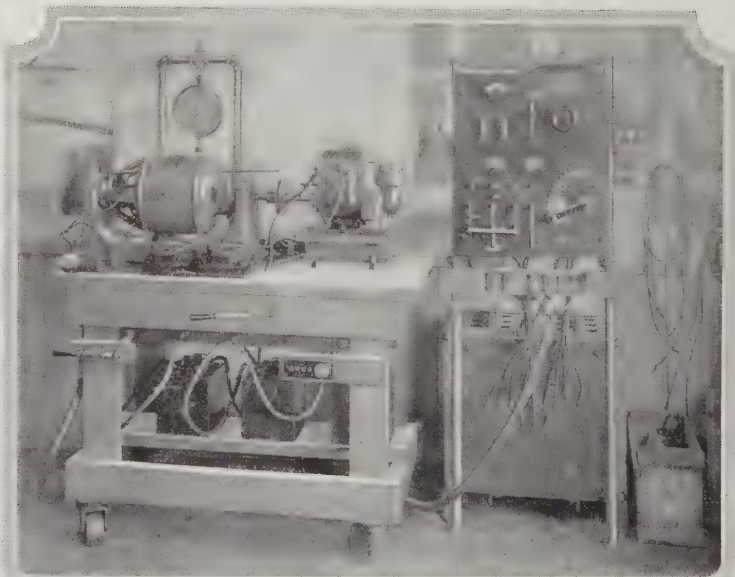
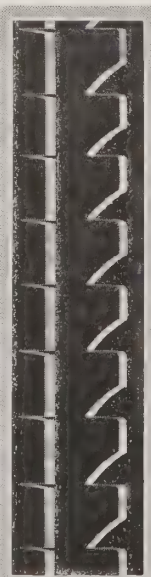
The testing of bearing balls is a good illustration of how compressional strength is determined. Samples are taken from each box of bearing balls and three balls placed in the machine, one on top of the other. The pressure is applied downward steadily until a failure occurs, the amount of pressure being carefully recorded as before.

In the transverse test the pressure is also applied downwards. If a front axle is to be tested, it is set on the king bolt holes and the load applied to the spring pads, which approximates the load as carried in the car. The test continues until the axle takes a permanent "set"—in other words, will not go back to its original straightness, when the deflection is measured with a deflectometer, the amount of the pressure being also taken into consideration.

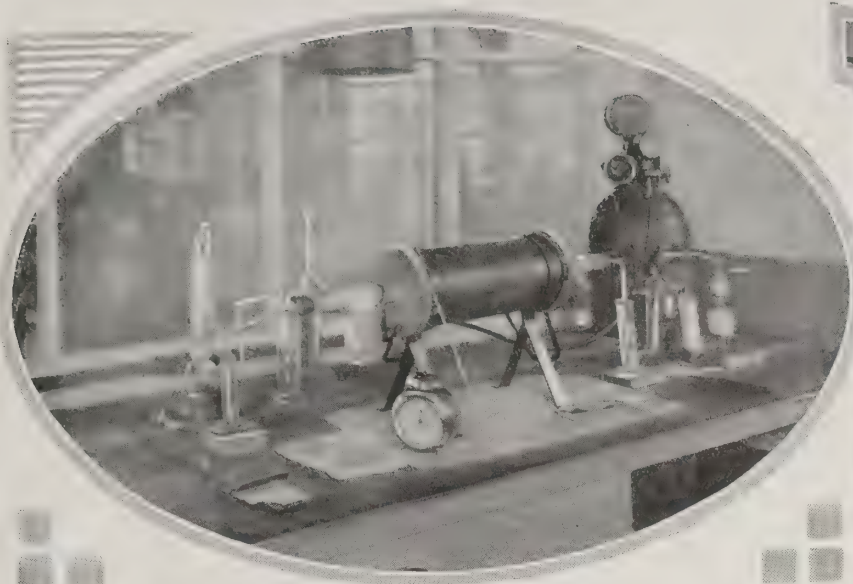
In the torsion, or twisting test, such parts as propeller shafts and drive shafts are placed in a machine and twisted until the elastic limit has been determined by means of an instrument called a troptometer. The twisting is then continued until failure occurs, the number of pounds required to reach the elastic limit and the failure being recorded, as in the other tests.



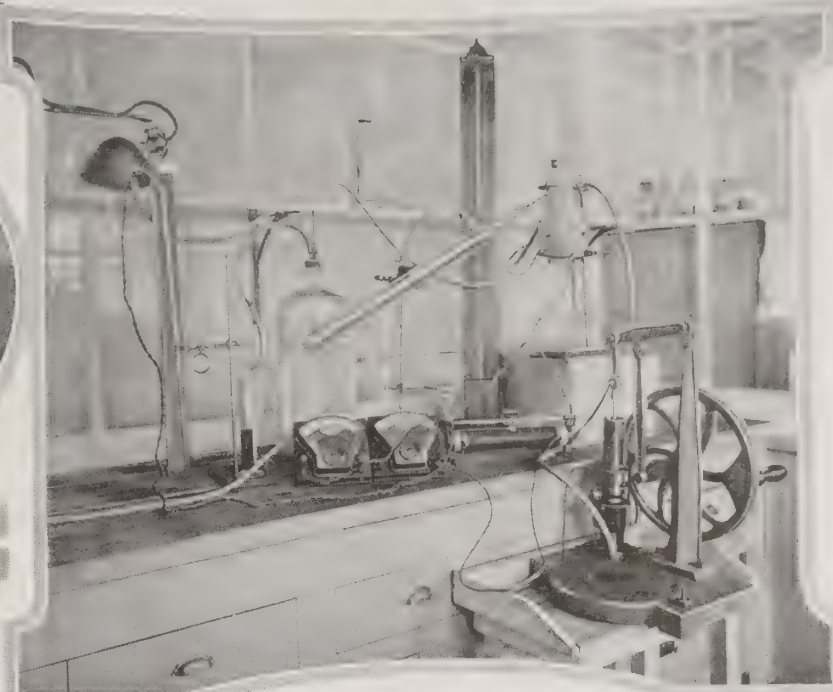
This wonderful device makes moving pictures of the primary and secondary currents in Buick ignition systems. A strip of the film is shown in the center



This small dynamometer in the Buick testing laboratories was especially designed for testing the power and efficiency of Buick electric starting motors



This apparatus is used in determining the amount of carbon in all steel used in building Buick cars. It consists of a bottle of pure oxygen, a washing device, a furnace for heating the steel and a receptacle for collecting the carbon, which is then weighed on delicate scales



Heavy oils are tested in this vacuum distilling outfit, which reduces the temperature at which the oils would normally vaporize

In the chassis spring test the springs are placed in a specially designed machine and set up to deflect and rebound to the equivalent of their maximum travel in a car. In other words, the springs receive the same abuse as if they were mounted on a car which was being driven over bumps so severe that they hit the bumpers on the downward travel and were stopped by the rebound clips on the rebound. The machine delivers 120 such vibrations per minute, the test continuing until one of the spring leaves breaks, after which all the spring leaves are given the Brinell test for hardness and are then analyzed in the chemical laboratory as previously described. The Brinell hardness test consists of placing a steel ball on the part to be tested, placing a certain amount of pressure on the ball and then measuring the depth of the dent made in the steel surface of the part.

Valve springs are tested in a device which accommodates 12 springs at a time, compressing them one-half inch farther than their normal travel in the motor. The springs are operated at a speed of 1500 vibrations per minute until a failure occurs. If a failure has not occurred when a total of 5,000,000 vibrations have been given, the springs are considered all right.

The valve springs are also tested with scales for "weight"—i. e., the amount of pressure they exert when compressed.

There are countless other mechanical testing devices in the physical laboratory, such as the machine for testing speedometers; the impact machine for testing the dynamic strength of steel; oil testing apparatus of every description, with Westphal balances for testing the specific gravity, a flash and fire outfit for motor lubricating oils, viscosimeters for testing the fluidity of oils at different temperatures and distilling outfits for light and heavy oils; radiator and

fan testing devices and outfits for testing all Buick parts, both manufactured and purchased, not a single thing is overlooked and no part is too small to receive the most rigid test.

The Metallurgists

THE metallurgical laboratory contains a battery of complete, modern heat treating ovens, with electric pyrometers for accurately measuring the temperatures in hardening and annealing steels. Metals are also examined under microscopes that will magnify from 10 to 2030 diameters. Before being placed under the microscope, the metal is given seven different polishing operations, beginning with emery wheels and finishing up with jewelers' rouge. After the polishing operations the surface is etched with acids and the structure of the metal examined under the microscope.

Metallurgy has contributed a great deal towards making the automobile possible. And the automobile industry has contributed vastly to the science of metallurgy in the development of special and alloy steels and metals.

The Electrical Laboratory

THE electrical laboratory contains electrical testing apparatus of every description. Perhaps the most interesting of these is the oscillograph, which is a complicated moving picture machine for making photographs of the strength and regularity of the current used in ignition. The finished pictures show two parallel strips, one with a record of the primary current (from the battery to the coil) and the other with a record of the secondary current (after the voltage has been increased by the coil and is transmitted to the spark plugs). These photographs show with

the greatest accuracy any irregularity in either the primary or secondary current, and are made at intervals during the testing of the apparatus until it has run the equivalent of 25,000 miles on a Buick car. The photographs are also made at several different motor speeds, as a defective apparatus may show good results at one speed and fail entirely at others.

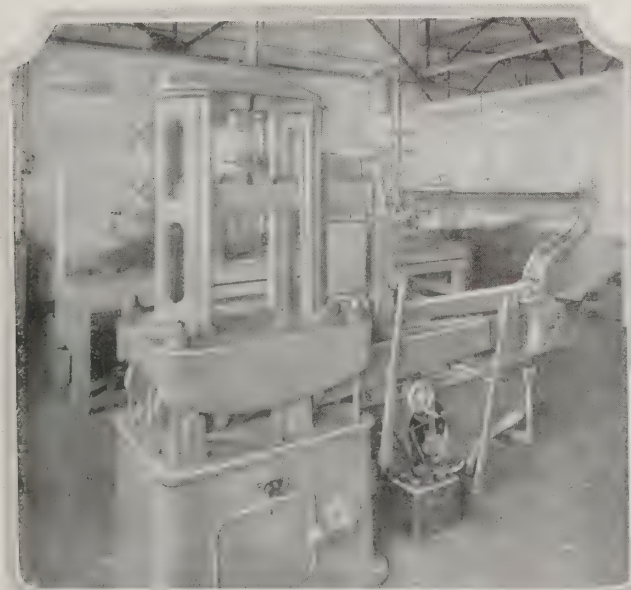
There is also a small but very accurate dynamometer outfit for testing the power of the electric starting motors, in the same manner that the Buick gasoline motors are tested.

The power of lights is tested in this department as well, the tests covering not only automobile lights of different sizes, but the lights used throughout the factory departments.

In short, the motto of these four Buick testing laboratories is "Show Us." There is not a branch of automobile manufacture which they do not investigate and measure its efficiency with scientific accuracy. They have an exact way of testing everything that is bought and used around the plant, whether it enters directly into the cars or not. They see that the Buick Motor Company gets coal that delivers the greatest amount of heat for the prices paid and that the right material is used in the right place in every department.

They keep in touch with the manufacturing departments proper by their field men, with headquarters in the testing laboratories, who follow the work in the factory and see that all operations are conducted as specified.

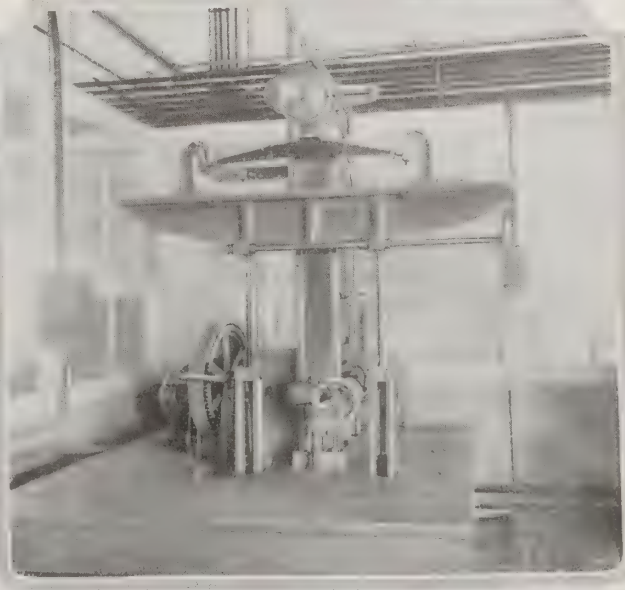
They help coordinate the efforts of the engineering department and the manufacturing departments and insure a degree of economy and efficiency in Buick cars that could be obtained in no other way.



This powerful machine tests metals by breaking them, either by stretching or compressing them, keeping a record of the force exerted



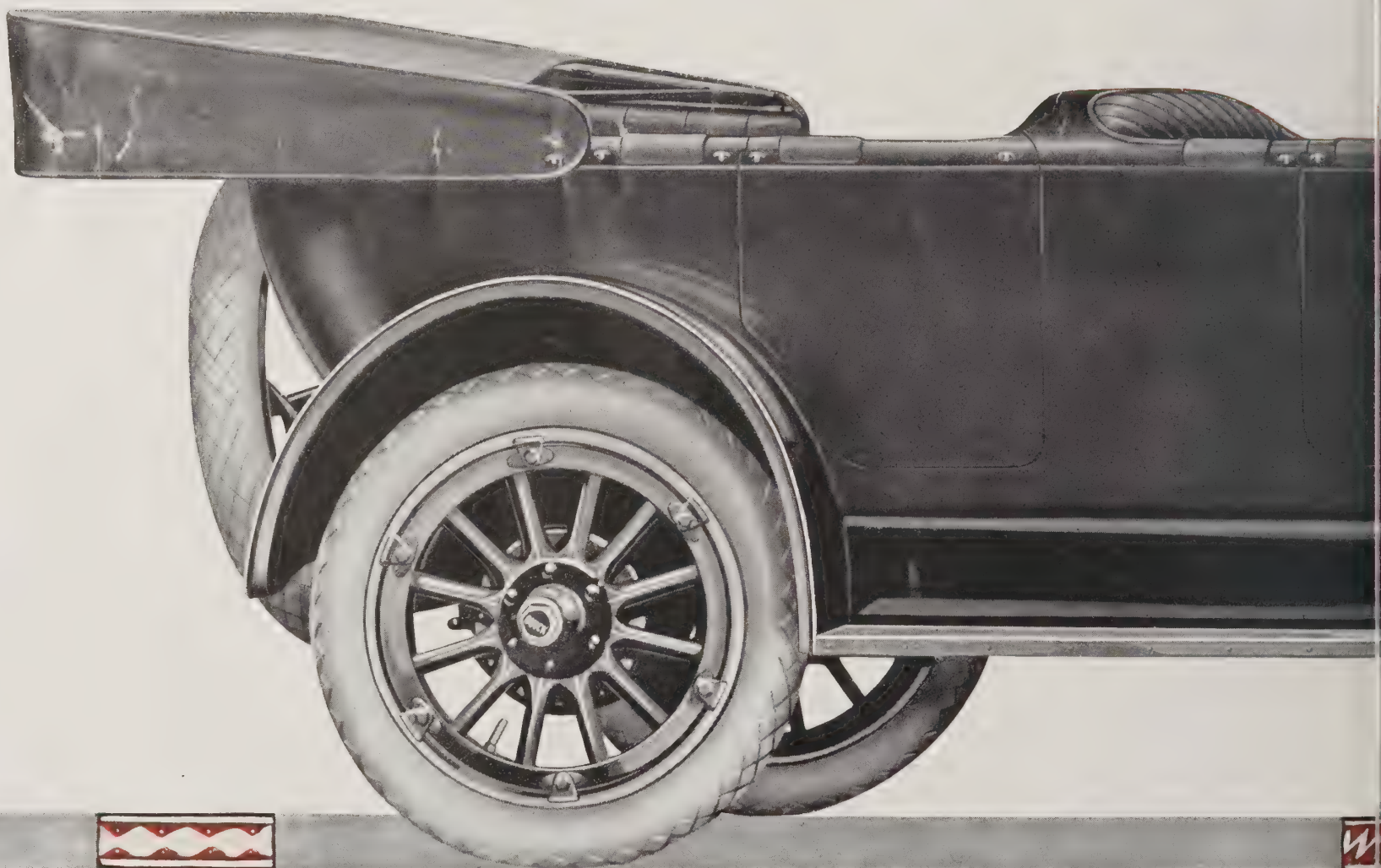
WHEN BETTER
AUTOMOBILES
ARE BUILT
BUICK WILL
BUILD THEM



Buick chassis springs are tested by this vibrating machine, which records the number and force of the vibrations required to break them



Forty



THERE is much of the "Forty-nine" spirit in the biggest Buick model—a spirit that led on and on, over trackless deserts and great mountain ranges, overcoming all obstacles with a dauntlessness that has never been surpassed.

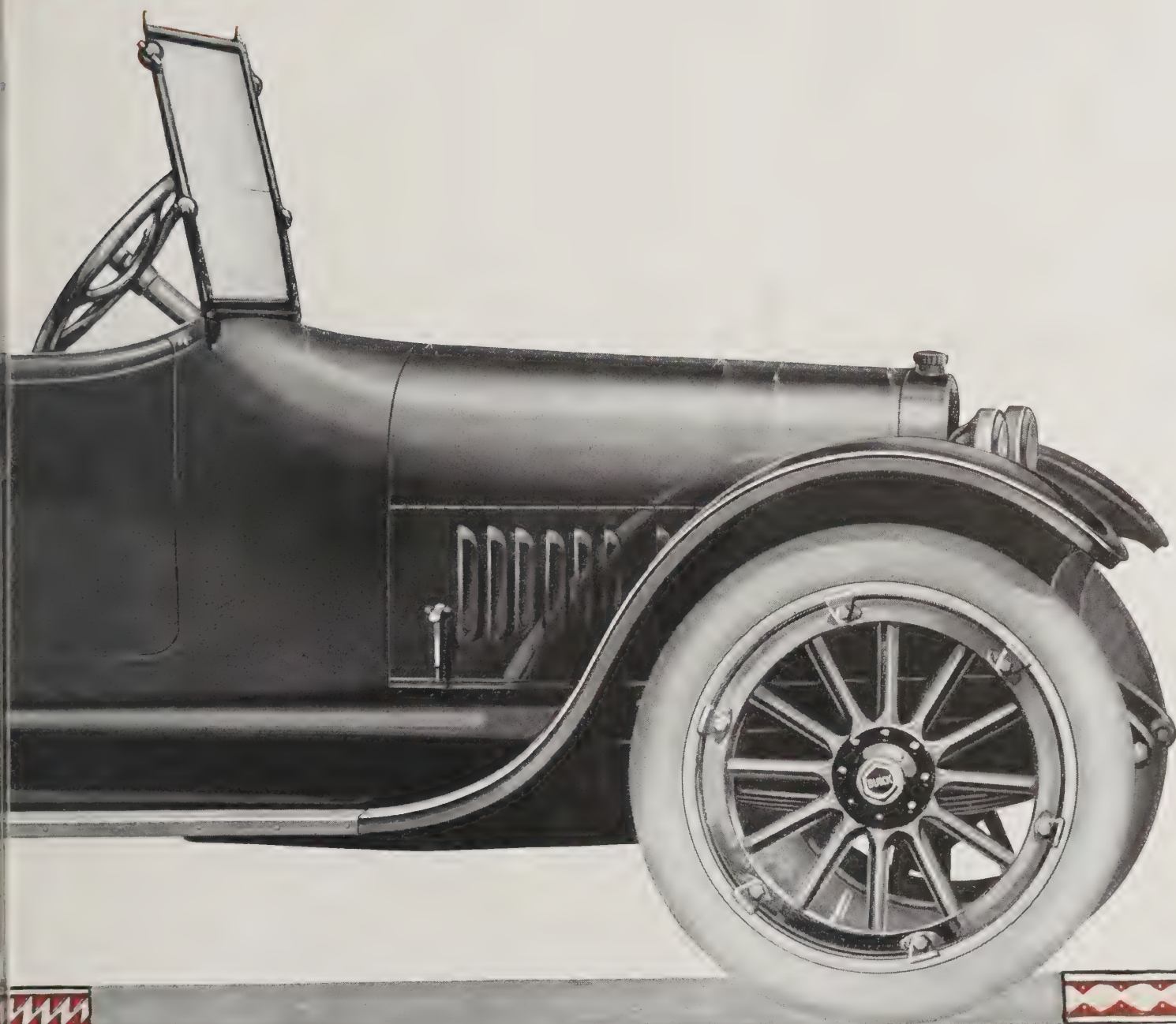
The Forty-niners left behind them a marvelous record of performance. The Buick Forty-nine is distinguished among motor cars for the ease with which it conquers the most trying con-

ditions of road and climate. The swing of the plainsman, tireless, instantly into superb power when

The big E-Six-49 has already won in favor. There is no service to the Valve-in-Head motor, and its victory of hard knocks. It is big with



-nine



carriage suggests the sinewy and without effort, yet leaping occasion demands.

performed its way into national severe for its powerful Buick knit chassis will stand a world awkwardness—strong without

unnecessary weight. It is built for those who need a big car, not merely in point of passenger capacity, but in ability to serve on boulevard or mountain trail alike.

It has everything that can be asked for in a motor car, from hand buffed leather upholstery to the smallest details and refinements, and is the crowning achievement of nearly twenty years spent in the development of Buick motor cars.

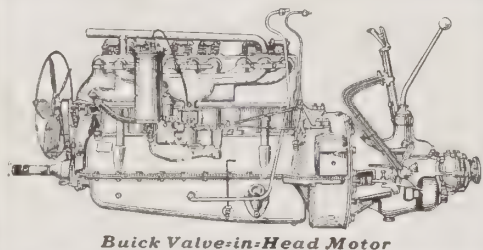
THE BUICK CAR AS A MACHINE

THE chief thing to remember about a motor car is that it is a piece of machinery. Therefore, it must be bought as a machine. Body lines, finish, one-man tops and a hundred other details are quite necessary in reaching the height of the buyer's ideal, but fundamentally they have little to do with long and consistent functioning. Even an excess of power does not necessarily guarantee that.

For besides, being a wonderful machine, a motor car is a collection of intricate mechanical units, each with a distinct relation to the others and working in harmony with them. The finished car must of necessity be judged by the manner in which these mechanical units are coordinated and balanced to make up what is known among engineers as a well engineered car.

One would hardly be justified in purchasing a car solely on the strength of one or even several of these features. It is only when the correct relation between power and load, comfort and safety, performance and durability, is preserved that we can find true motor car efficiency. And this result can only be obtained after years of scientific study backed by broad experience.

A motor car is efficient in proportion to the manner in which it is engineered. The rear axle, when properly designed to transmit the power of the motor, works quietly and wears indefinitely. An evenly balanced car rides comfortably even on poor roads. Perfectly



Buick Valve-in-Head Motor

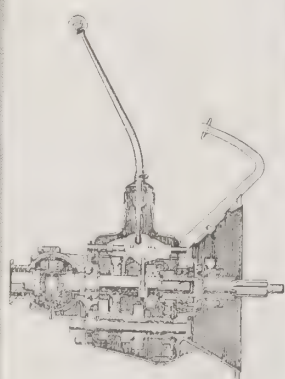
designed steering mechanism or well designed brakes insure safety to passengers and driver. And so on down to the smallest part of the chassis, for every single part has a definite bearing on long life and continuous service.

The Buick Chassis

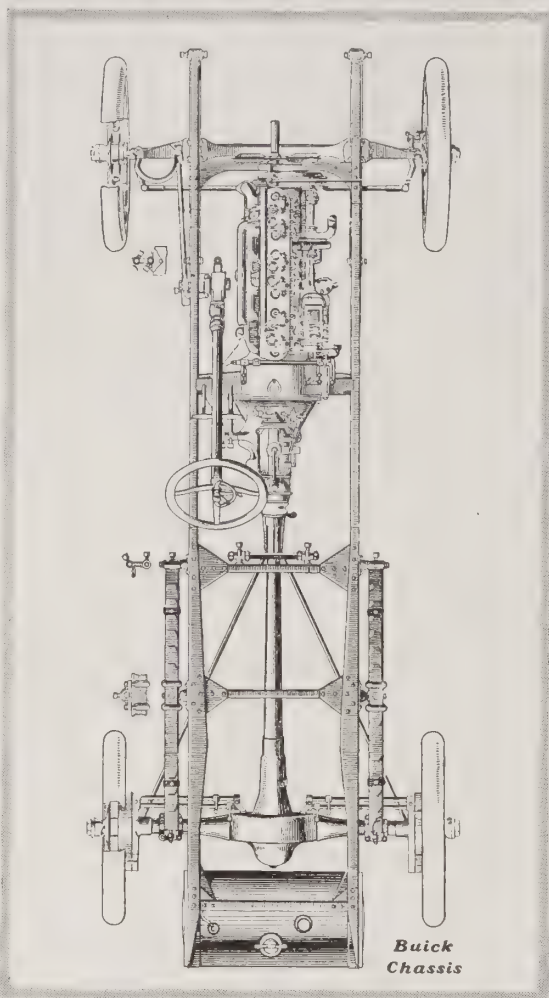
THE BUICK chassis has been developed as a perfectly consistent whole. While great emphasis is laid upon the correct design and manufacture of each and every part, it should also be added that only in conjunction with the rest of the parts as presented in the Buick car do they reach their highest state of efficiency.

For example, the Buick motor, with its remarkable power and endurance, if placed at random in some other chassis, would not secure the same effective results that it does in the Buick car, because it is designed and built to meet the exact conditions that exist in the Buick. Each feature has been adopted because it does its work better than anything else.

The thorough consistency of the Buick car is reflected in its performance, primarily, and is brought home with ever-increasing emphasis the longer the car is run. It is this balance and proportion that make the Buick so serviceable and economical.



Buick Transmission



Buick Chassis

The Buick Valve-in-Head Motor

THE Buick Valve-in-Head motor is the product of nearly twenty years' study and development, and is the most important mechanical unit in the car. The valves, being located in the head, make it possible to reduce the water jacketed space to the minimum, thus lessening the amount of heat radiated through the jackets, with a consequent economy in fuel consumption. Around this obviously correct principle the refinement of the motor has progressed from year to year, until each part is just the right size, the right strength and made of the most durable material that can be secured for the purpose.

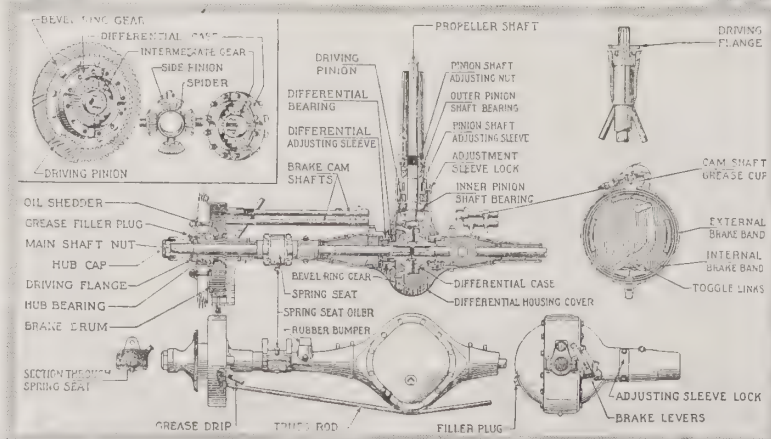
There is not a freakish bit of design or construction in its makeup, nor one that has not been thoroughly proven in practice.

The Buick Transmission

THE Buick transmission is of the selective sliding gear type, designed and built complete in the Buick factory, from the rough castings and forgings right on up. The gears are heat treated and machined with the greatest accuracy, to insure long life and noiseless operation. The finest anti-friction bearings are used.

The case is cast in one piece, with a detachable cover, and is strongly webbed and reinforced.

The very best of material is used throughout and each part is perfectly made with reference to the stresses it must bear in service.



Buick Rear Axle

The Buick Clutch

THE Buick clutch is what is known as a dry plate disc clutch, i. e., it consists of a series of steel plates faced with asbestos friction material. No oil or other liquid is used on the discs at any time.

The clutch driving plates are connected to the flywheel of the motor and the driven plates with the clutch shaft of the transmission.

This clutch is wonderfully smooth and positive in operation and requires adjustment but seldom. When adjustment is necessary it is quickly effected by an adjusting nut on the clutch release rod. The entire clutch is lubricated by two grease cups.

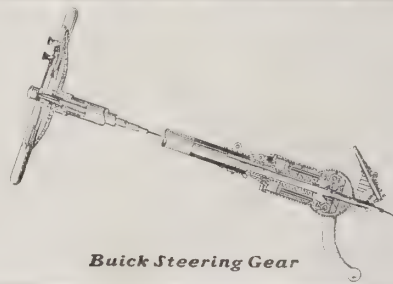
The Buick Steering Gear

THE Buick steering gear is of the semi-irreversible type, with exceptionally strong housing and strong connections. The motion of the wheel is transmitted by means of a steel tube carrying a double threaded worm or screw engaging with two half nuts which slide up and down in guides, operating a steering yoke connected with a pitman arm.

This mechanism is very easy to operate and the greatest care is exercised in its manufacture to guard against defects in material or workmanship.

The Buick Rear Axle

THE Buick rear axle is of the full floating type, carrying the full weight of the rear



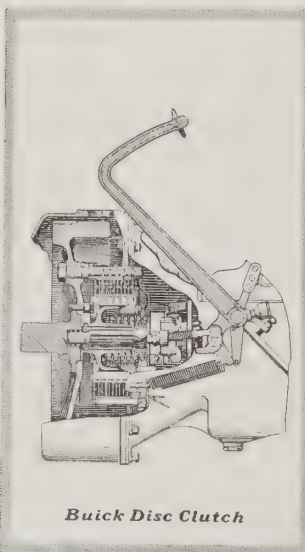
Buick Steering Gear

of the car on the axle housing and relieving the axle shafts from all save driving strains.

It is extremely accessible for adjustment, lubrication and repair. The pressed steel housing is further reinforced by means of a

truss rod. Internal and external brakes are carried on the axle housing, operating directly on the rear wheels.

Like the other parts of Buick cars, Buick axles are manufactured in the Buick factory, three big axle plants being maintained for the purpose, equipped with great drop forge hammers, heat treating ovens and the most modern machinery.



Buick Disc Clutch

Buick Bodies

BUICK bodies are made in the Buick factory. Great presses mold them to shape in steel dies, after which they are fastened to strong ash frames. The many coats of paint and varnish are carefully rubbed and polished between operations. The upholstery consists of patented steel cushion springs, genuine curled hair and real leather, and is applied before the final coat of varnish to prevent accident to the finish. Hand work is lavished on all operations, in order that the bodies may be in perfect keeping with the high grade mechanical features of Buick cars.

THE CLOSED CAR IN SUMMER

How to Get the Utmost Comfort and Utility from Your Buick Closed Car

THE vast increase in the demand for closed cars during the past few seasons is entirely due to the fact that motorists have learned from experience the superior comfort and usefulness of closed cars at any season of the year.

No one would question that the closed car is superior as a winter conveyance, or for use in damp and stormy weather. But it is only of late years that motor car owners have realized generally that there is more actual comfort in a closed car in hot weather than in an open model.

The truth of the matter is that the closed car may be made cooler than an open car, even in the hottest weather, for the reason that the permanent roof affords a more perfect protection against the sun.

But perhaps the biggest feature of the correctly designed closed body is the perfect control it gives over ventilation. At any season of the year it is possible for the closed car owner to have exactly the amount of ventilation he wishes, and from whatever direction he wishes.

Two factors make this true. First, the close fitting, easily operated windows, and second, the design of the three-piece windshield which is standard equipment on most closed models. The net result is to place ventilation completely under control, instead of making it more or less compulsory.

In cool evenings you may be driving when strong drafts would be more or less dangerous. You leave your windshield closed and lower one or two windows on the lee side just a bit from the top, which will properly ventilate your car, and at the same time you

position of the windows, whether partly or completely closed or opened, all occupants of the car have undisturbed vision in every direction.

The three-piece windshield is a valuable asset to the closed car driver. A little experience with it will reveal its many advantages. The manipulation of this type of windshield is not perfectly understood by all drivers under all conditions. There are times when the outside glass serves best as a sort of buffer for the inside glass. But in storms of snow, sleet or rain, particularly when accompanied by heavy wind, it is often best to push the upper half of the inside glass up parallel with the roof of the car and then adjust the outside glass to get clear vision between the outside glass and the lower half of the inside glass. For if the outside glass is left in its usual position under these circumstances, the entire inside glass is liable to become covered with a coating of snow or water, in which case it will be impossible to see through it. (See Figure 2.)

In very warm weather when little or no dust is encountered, full advantage of the breeze may be taken by adjusting the lower half of the windshield so the incoming air is blown almost straight to the floor, the upper half being entirely opened. The air will then sweep through the whole interior, cooling the car

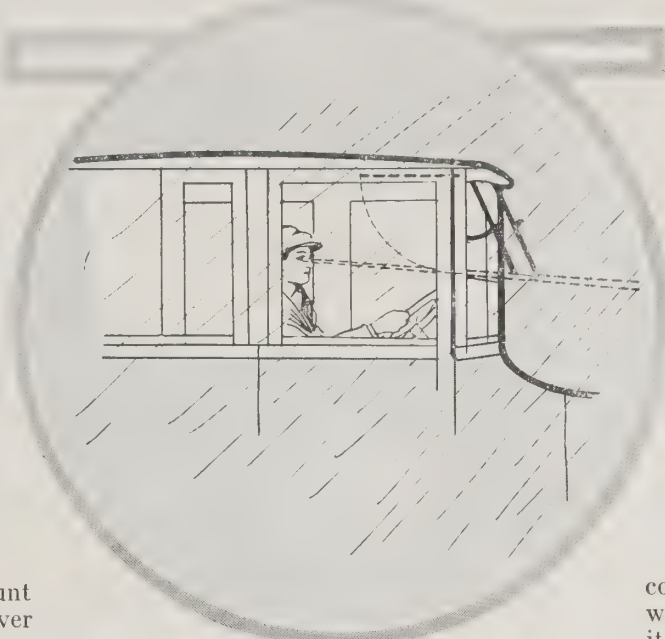


Figure 2

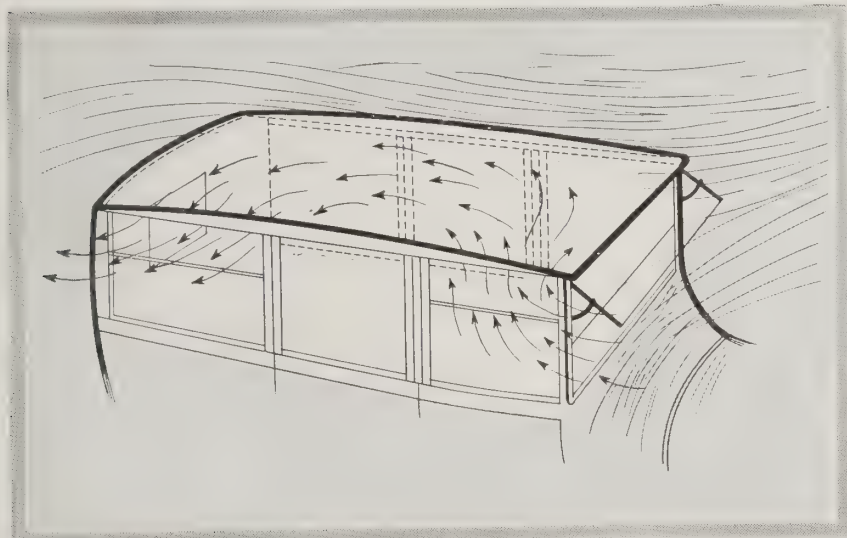


Figure 1

It is possible to make the open car top and side curtains quite waterproof, so that the occupants will never be bothered by getting wet in heavy rain. This is a matter of using good material, and in this respect the Buick open cars give perfect results.

But there are certain conditions under which the closed car offers a more complete protection than it is possible to secure in an open car.

For example, we will say that you are driving in the country on a hot, dusty day. The wind is blowing lightly from the left side of the road and considerable traffic is coming from the direction in which you are headed, the dust rising in dense clouds and floating over your car.

In an open car you could not avoid the dust. In a closed car it is perfectly simple. You close the windshield and all windows on the left side of your car, leaving as many windows open on the right side as you find necessary. The breeze created by your forward motion will sweep back past the open windows, creating a certain current of air that will ventilate the car, while the dust clouds will be borne away from you by the wind. (See Figure 1.)

will not feel the slightest draft. (See Figure 3.)

While as a rule it is desirable to have a certain amount of ventilation in the car, there are times when it is equally desirable to close the inside up entirely for a time, either to shut out dampness, smoke or other outside condi-

tions. With a closed car this is quickly and easily accomplished.

There are endless phases to the ventilation problem, but a little experience will show the closed car owner how to meet them all easily and effectively. And no matter what the



Figure 4

These cars are built and finished in the very finest manner, with deep, comfortable upholstery, handsome lines and lasting finish. They are complete in every respect as to details and equipment, and measure up perfectly to Buick standards of excellence and serviceability.

One is a distinctly professional Coupe for three or four passengers. The second is a five-passenger Sedan with four doors, and the third is a seven-passenger Sedan of exceptional roominess. These are all six-cylinder models. The fourth is a serviceable five-passenger, four-cylinder Sedan.

These cars are built and finished in the very finest manner, with deep, comfortable upholstery, handsome lines and lasting finish. They are complete in every respect as to details and equipment, and measure up perfectly to Buick standards of excellence and serviceability.

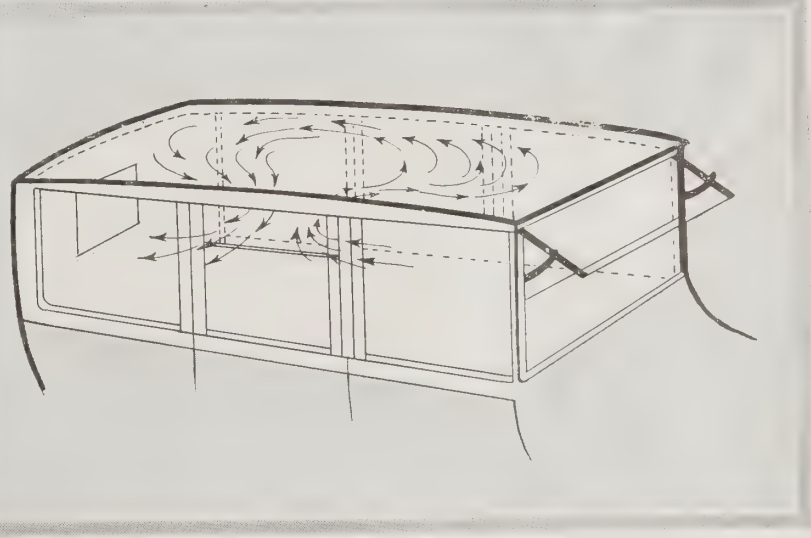
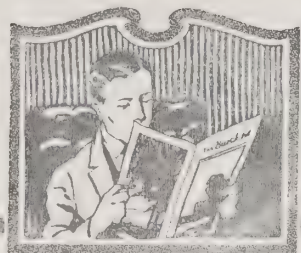


Figure 3



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars

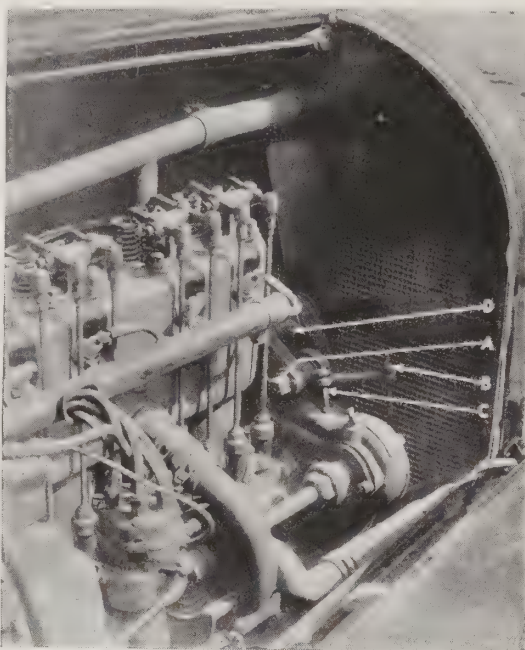


Adjusting the Fan Belt

ON account of its location, the fan belt accumulates a certain amount of oil and water, which may eventually cause the belt to stretch. If the belt becomes too loose from this cause it will slip, perhaps not enough to be noticeable but enough to slow the fan down appreciably.

The Buick fan bracket is a great improvement over the old type and is so constructed as to make adjustment extremely simple whenever necessary. The bracket is pivoted on the fan bracket bolt (a) and the adjustment is made by turning the wing nut (b). This wing nut works up and down on a long bolt passing through the outer arm of the bracket, the lower end of the bolt being attached to a stout coiled spring to provide the necessary tension. Another bolt (c) passes through a lug on the same arm of the bracket and rests against the timing gear housing, preventing any back action of the bracket.

The tension on the belt may be tested by placing the finger under the belt and pulling it outward, turning down on the wing nut until the belt is fairly tight.



Adjustments for Buick Fan Belt

It is also well to watch the lubrication of the fan hub from time to time, removing the brass plug (d) with a screw driver and filling the opening with lubricating oil.

At this season of the year it is a good idea to flush out the radiator and water jackets to insure that they are clean and free before the warm weather comes on. There is always some sediment from the water placed in the cooling system from time to time, and while this sediment may never be sufficient to clog the system it does not belong there and is easily removed.

First drain the system by means of the petcock in the bottom of the radiator. Disconnect the upper and lower hose connections. To flush the cylinder jackets, pour water in through the upper opening until it runs out at the bottom perfectly clear, or better still, let the water run in from a hose.

To clear the radiator: Where city water pressure is available, it is best to let the water run into the radiator from the bottom connection and flow out through the filler at the top until it runs clear. Otherwise it may be run in from the top.

SERVICE RECORDS GRATIFYING TO BUICK OWNERS

Tows Heavy Load Up Mountain

MR. JOSEPH J. PHILLIPS is connected with the City Engineer's office, San Francisco, and uses his car all over northern California on business connected with the vast Hetch Hetchy water system being built for San Francisco. On January 14th he wrote from Groveland: "At the foot of the Priest Hill grade this afternoon I met a party of four men in a Buick car, tied up with engine trouble. I had five in my E-Six-49, but I hooked on and towed them up the seven-mile grade to Priest's without stopping. The liquid in the motometer did not rise as high as the lower arc of the open circle. Considering that I went up from an elevation of about 600 feet to an elevation of 2456 feet above sea level and that the road was heavy and muddy, and one continuous climb, I consider this some record, both for power and cooling qualities.

"Men in this vicinity tell me that not even the trucks around here would tackle the job."

Maximum Power Plus Economy

I TAKE great pleasure in advising you," writes Mr. Harry Levine, of Milwaukee, "of my satisfaction with the Model E-Six-45 Buick I purchased from you last August. I have been using different makes of cars for the last seven years and my experience with this model has been such as to recommend it to those who are in the market for a serviceable car that is saving in fuel and at the same time giving most mileage and maximum power.

"The service rendered by the East Side Buick Company has been prompt and efficient. Since purchasing my car I have recommended it to four others who have made tests with higher priced cars before purchasing and are likewise satisfied in selecting the Buick models."

"Yours for More Buicks"

YOURS for more Buicks," is the closing wish of Mr. Harold G. Florin, of Johnstown, Pa., in his letter of January 5th. "Through afforded pleasure, satisfaction, over and over again, can be said of the Buick D-Six-45. I am the proud possessor of this model, have driven it over 9,000 miles, during which time little difficulty has been experienced in its upkeep. Voicing enthusiasm, I feel every Buick is deserving of everlasting praise."

Conquers Mountain Snows

THE E-Six-49 has certainly given me wonderful service," writes Mr. Charles Keelor, of the Keelor Chemical Co., Ltd., Wetmore, Pa. "Living here in the mountains, where I do, a car is being constantly put to a test. With the roads even in half-way good condition, this car goes over these hills on high speed with apparent ease, carrying seven people. Since the heavy snows have come on, if there is a chance at all of getting through, this Buick car would do so. In fact, I have been in the town of Kane, Pa., many days this winter when there was not another car to be seen, and many people would make inquiry as to what kind of a car I was driving."

Not One Bit of Trouble

JUST a word of praise for your Light Six Buick," writes Mr. H. G. Callahan, of the East End Grocery, Salem, O. "I have run this car about 5,000 miles and it has never given me one bit of trouble, always ready to go. I most certainly have boosted 'Buick' and talked 'Buick' to all of my friends, and am always willing to stop a few moments to do it. I thank you for the Buick Bulletin you have been sending me."

Never Cranked by Hand

I DRIVE a Buick D-Four-35," writes Mr. Walter Christensen, of Upland, Neb. "Have driven it 8,500 miles and the motor has never refused to go once, nor has it ever been cranked by hand. I have used this car in the coldest weather and it starts off without any trouble any time and anywhere. I must say this car is easy on gas and oil. I have gotten as high as 24 miles to the gallon of gas, which is surely enough for any car.

"Would like to get your Buick Bulletin."



"A Great Net of Mercy Drawn Through an Ocean of Unspeakable Pain"

What Your Red Cross Dollars Do

An Accounting of Expenditures of the First Red Cross War Fund

Every one of the twenty million and more Red Cross members is entitled to this Statement. Your local Red Cross Chapter can give you further details.

First War Fund Appropriations up to March 1st, 1918

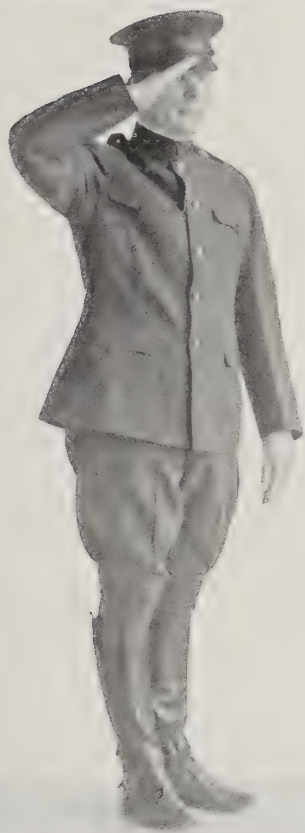
Foreign Relief:		United States Relief:	
Relief in France	\$30,936,103.04	U. S. Army Base Hospitals	\$ 54,000.00
Relief in Belgium	2,086,131.00	U. S. Navy Base Hospitals	32,000.00
Relief in Russia	1,243,845.07	U. S. Medical and Hospital Work	531,000.00
Relief in Roumania	2,676,368.76	U. S. Sanitary Service	403,000.00
Relief in Italy	3,588,826.00	U. S. Camp Service	6,451,150.86
Relief in Serbia	875,180.76	U. S. Miscellaneous	1,118,748.41
Relief in Great Britain	1,885,750.75	Total U. S. Relief	\$ 8,589,899.27
Relief in other Foreign Countries	3,576,300.00	Working capital for purchase of supplies for resale to Chapters or for shipment abroad	15,000,000.00
Relief for Prisoners, etc.	343,304.00	Working cash advances for France and United States	4,286,000.00
Equipment and expenses in U. S. of Personnel for Europe	113,800.00	Total of War Fund Appropriations	\$77,721,918.22
Total Foreign Relief	\$47,325,609.38		
Restricted as to use by Donor	2,520,409.57		

At the close of the first year of the War the Red Cross goes to the public for the raising of the Second War Fund with a record of appropriations which warrants continued contributions to this great relief work. As an influential citizen of your community, join with your local Red Cross Chapter to make this campaign successful. Your Red Cross is the Army behind the Army.

Give till your heart says stop.

Second Red Cross War Fund Week May 20-27

The Buick Service Flag



Lieut. A. B. Chambers



Private Thomas Woolley

Over Four Thousand Buick Men Called to the Colors to Fight for World Democracy

THE end of the first year of the great world war, as far as America is concerned, finds a vast host of American boys called to the colors. The recruiting of the biggest army and navy that this country has ever known has been a tremendous undertaking, and industry has been called upon to furnish its share of men as well as of materials.

The patriotism that lies so close to the surface of all Americans is far from wanting among the Buick employes, and ever since the government took its decided stand for the defense of democratic principles throughout the world, the various departments of the big factory have been decked with countless flags. The Red Cross, Liberty Bond and War Savings Stamp campaigns have been a great success, and it may be truthfully said that there is scarcely an individual connected with the

Buick organization who has not contributed as liberally as possible to them.

Men have been leaving for the training centers daily, and the task of keeping up to date the service flag in the reception room of the factory office building has been a difficult one. At present the number of stars on this flag is 4153, as shown at the top of this page.

A unique feature of the Chicago Automobile Show this year was the exhibit of the Buick Chicago Branch. The two American flags shown in the center of the page were crossed in front of the rich velvet background, while two soldier employes of the Company did the honors. The first was Private Thomas Woolley, wearing the faded but dauntless blue of '61, and the second was Lieut. A. B. Chambers, dressed in khaki that has not yet had its baptism of fire.

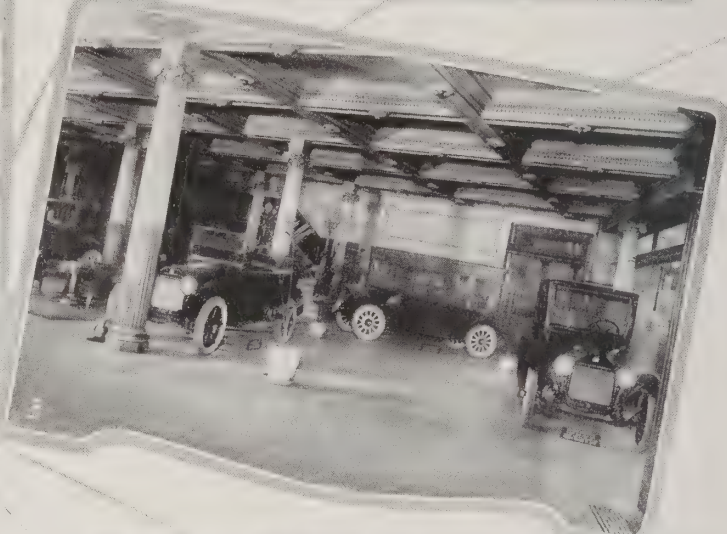
Lieut. Chambers is a member of the United States Coast Artillery.

Private Woolley is now known as plain Mr. Woolley, and is quite reticent about his experiences in the Civil War. However, he is very proud of his only son and his oldest grandson, both of whom are about to board ship for France, "to fight for Uncle Sam and Old Glory," as Mr. Woolley puts it.

Mr. Woolley has been employed by the Chicago Buick Branch for nine years and is 74 years of age, being the Branch's oldest employe both in point of age and service.

Both of these men are splendid examples of the patriotism that is running so high in every section of the country and making possible the effective work that America must do on both sides of the water in the great undertaking in which she has embarked.

THE BUICK BRANCH IN NEW YORK



THE New York Buick Branch (1) is a really colossal institution. Situated in the heart of the most densely populated section in the civilized world, it is at once the seat of the largest retail and wholesale motor car business in the world's largest city.

The retail showrooms (2 and 3), located at Broadway and 52nd Street, cover a floor space of 10,000 square feet and are most beautifully decorated in old ivory and gold, the woodwork being of the finest mahogany. The mosaic floor is always spotlessly clean and the entire atmosphere is refined and dignified.

The immense volume of business done by each department necessitates that things be done quickly in addition to being done well, in order that customers will not be put to annoying delays. This is as much a matter of system as it is of personnel, and the constant effort of the officials is to keep all systems working smoothly and efficiently.

The branch is headquarters for a large number of dealers in the surrounding cities and towns, assisting these dealers in every possible way in the delivery of cars and rendering service to Buick owners.

The service branch of the business is naturally a very important one, and the stock of parts maintained is sufficient to replenish the stocks of the dealers as well as to take care of the many thousands of Buick owners in New York City.

The service depot is modeled after the service department at the Buick factory, with the

same standardized steel stock bins and method of arrangement and indexing parts.

Recently it was found advisable to remodel the stock department, particularly that part which deals directly with local service. The offices were rearranged and new furniture and partitions installed. Everything possible to make it easier for the customer to get quick and reliable service has been done. Ten retail parts purchase windows (4) have been provided. The customers come to these windows, give their orders to a man who handles the entire transaction, instead of referring the customer to two or three different places before he is finished.

The stock room boys, whose duty it is to remove the parts from the bins (5) and bring them to the windows (6), are all equipped with roller skates and skim in and out through the broad aisles with remarkable speed, darting from one bin to another and filling the orders handed to them by the men at the windows.

The steel bins containing the parts are eight

feet high. The use of these bins has made it possible to store more stock on the same floor space, reducing the time required to deliver parts to purchasers. All parts are grouped in accordance with the part of the car they are made for, and an effort is made to keep those parts which any purchaser is most likely to call

for at the same time together. For instance, all valve parts are put in one division, piston parts in another and all the engine parts grouped together so that when a customer comes in to buy engine parts they will all be found close together and can be delivered to him in the shortest possible time. This feature also makes for greater accuracy in filling orders covering several kinds of parts.

The floor plan of the service department has also been worked out for the convenience of customers, so they can reach the person or persons they wish to see conveniently, the offices and stock rooms being arranged on opposite sides of the entrance.

The small parts in greatest demand are located nearest the delivery windows. The large parts and those in least demand are farther away. By these means both speed and accuracy are insured in the handling of parts orders—two features that are much appreciated by those having business with the parts department.



Buick



Everybody Knows
Valve-in-Head Means Buick

A Source of National Service

Now when the automobile is, more than ever, an essential public utility, every motor car is an effective national resource—radiating “lines of transportation” which relieve traffic, conserve personal efficiency and promote the general good.

For the business executive it simplifies daily routine, enabling him to carry out his program with least waste time and energy.

The farmer urged to produce more has found the ownership of a motor car a national duty as well as a personal convenience, enabling him to negotiate distance under all road conditions.

In Government work, mine and lumber camp, in cotton field and wherever industrial needs are most strenuous, the directors of the work by the use of motor cars have greatly increased the scope of their service.

The Buick car is a favorite in all lines of action because modern demands are answered by the success of Buick building, its economy of up-keep and dependable hardihood in service.

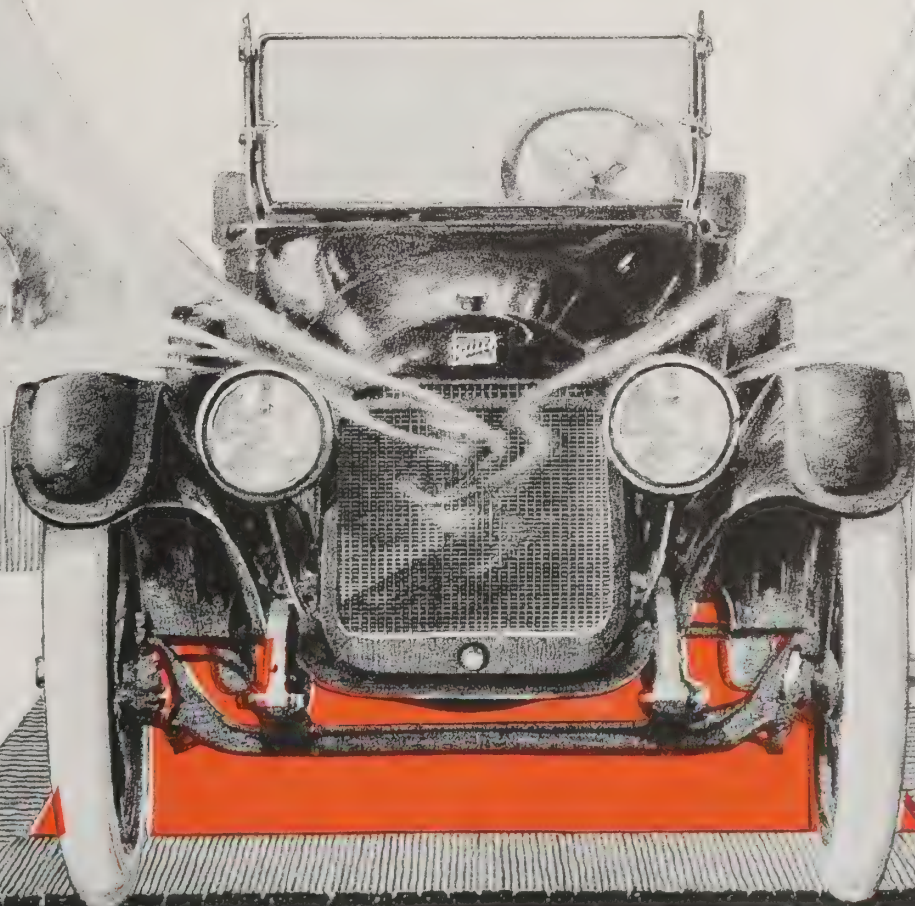
BUICK MOTOR COMPANY

Pioneer Builders of Valve-in-Head Motor Cars

Main Office and Factory, FLINT, MICHIGAN

Branches in all principal cities. Dealers everywhere

New Catalog showing complete line with prices, mailed upon request



Jeff Givall



Everybody Knows Valve-in-Head Means Buick

BUICK VALVE-IN-HEAD MOTOR CARS HAVE EXERCISED A PROFOUND INFLUENCE ON AUTOMOBILE DESIGN AND MANUFACTURE EVER SINCE THEIR INTRODUCTION, NEARLY TWENTY YEARS AGO. THE NINE NEW BUICK MODELS ARE THE FRUIT OF THIS UNPARALLELED ADHERENCE TO A CORRECT ENGINEERING PRINCIPLE.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

PIONEER BUILDERS OF VALVE-IN-HEAD MOTOR CARS
BRANCHES IN ALL PRINCIPAL CITIES -:- DEALERS EVERYWHERE



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FEB 17 1918

THE *Buick* BULLETIN

Published by the Sales Department
of the Buick Motor Company

MAY 1918

FIVE CENTS A COPY



In this Issue—On Sincerity in Advertising—Page 5



*And after April, when May follows,
And the whitethroat builds, and all
the swallows!
Hark, where my blossom'd peach-tree
in the hedge
Leans to the field and scatters on the clover*

*Blossoms and dewdrops—at the bent
spray's edge—
That's the wise thrush; he sings each song
twice over
Lest you should think he never could recapture
The first fine careless rapture!*

—Browning

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in behalf of
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THE BUICK BULLETIN

A Magazine of Motor Interest

E.T. Strong Managing Editor

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Volume Six

Flint, Michigan, U. S. A.

Number Five

THE WHIGGIN

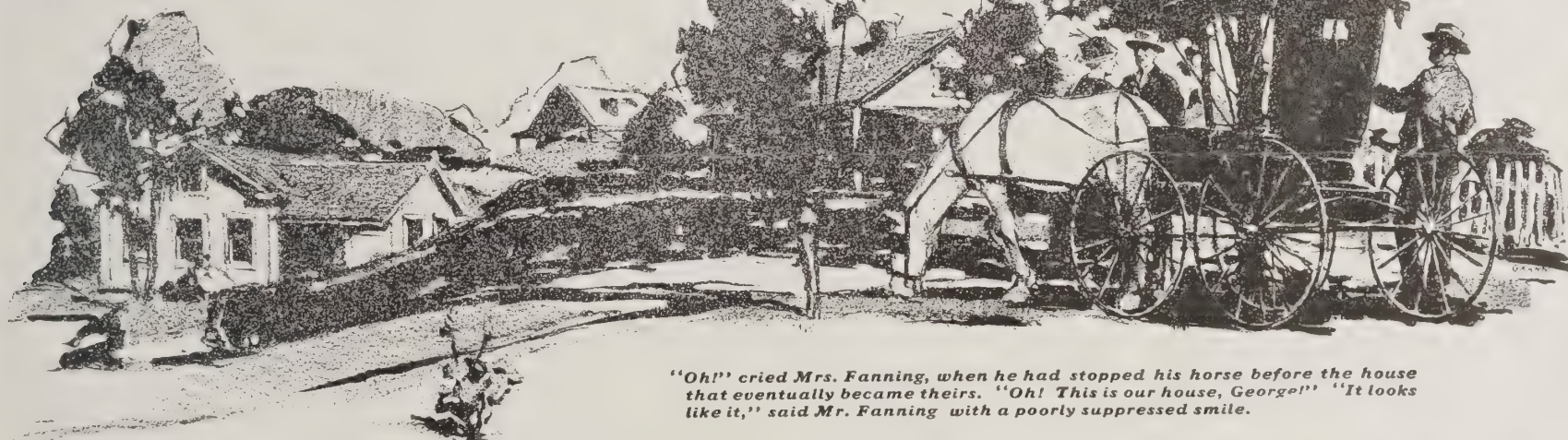
By ELLIS PARKER BUTLER

Author of "Pigs is Pigs"

THE Fannings had heard of Westcote, no matter how, and the solemn-faced real estate man had personally conducted them from house to house. He showed them so many vacant houses that they began to feel that Westcote must be a deserted village.

"Oh!" cried Mrs. Fanning, when he had stopped his horse before the house that eventually became theirs. "Oh! This is our house, George!"

"All right," said Mr. Fanning, quite reckless of the real estate man's deeper feelings, now that the deposit had been paid and he was sure of the house. "We can stand it if the Whiggin-Plipp can."



"Oh!" cried Mrs. Fanning, when he had stopped his horse before the house that eventually became theirs. "Oh! This is our house, George!" "It looks like it," said Mr. Fanning with a poorly suppressed smile.

"It looks like it!" said Mr. Fanning, with a poorly suppressed smile. "This certainly looks more like our house."

"Now, this," said the real estate man, "is a house you will buy."

As the Fannings eventually bought that house you can understand that they went through and over it with words of enthusiastic praise. "Open plumbing—yes, indeed!" "What nice wall paper!" "Oh, George, see how the dear little sparrows have made their nests between the slats of this shutter!" "Oh, George, come and look at this lovely range!"

"Oh, this is our house, all right!" said Mr. Fanning at last, when they had stepped outside to view the exterior.

"And only a thousand dollars down!" said his wife, squeezing his arm.

The solemn-faced real estate man let them do all the praising, and they needed no assistance, but now, when they had agreed on the price and terms, and he had pocketed the fifty-dollar deposit that bound the bargain, he opened his heart and, as a generous merchant throws in a final tidbit as good measure, he spoke, with all the air of a man conferring the great and ultimate blessing. There was a touch of awe in his voice.

"You'll have a Whiggin for a neighbor, too!" he said.

"That's good!" said Mr. Fanning jovially, for he was in a merry mood. The real estate man frowned. It was evidently no matter for jest.

"She is a Whiggin-Plipp," he said, with still greater awe.

"Capital W-h-i-double g-i-n, Whiggin. Capital P-l-i-double p, Plipp," said the real estate man unsmilingly. "The Whiggins are our oldest family. She married a Plipp—Bill Plipp—but he died. The Plipps are one of our oldest families. Sometimes we call her Cornelia Whiggin, and sometimes we call her Cornelia Plipp. The Whiggins are exclusive, and the Plipps are exclusive, but a Whiggin-Plipp! Oh! Gidap, Joe!"

Words seemed inadequate to express the veneration he felt for a Whiggin-Plipp, so he slapped his reins on the back of his old horse.

"All this here land used to be the Ebenezer Plipp farm," said the real estate man, waving his hand toward the "development" on which the Fannings' house stood. "That's why Cornelia ain't in the poor-house. She married a Plipp—Bill Plipp. Cornelia holds the underlying first mortgage on your house. On all them houses. She's mighty exclusive. Gidap, Joe! Go on, can't you? Gidap!"

It is a long haul from West 112th Street in New York to Westcote, and Mr. and Mrs. Fanning and the baby and Maggie (with a new pail and a mop) arrived hours and hours before the moving van with their household goods. They were unlocking their own front door with their own key for the first time—lock out of order, of course!—when a little woman with a sharp nose, like a rat, dressed in black calico and with a red shawl thrown over her head, came up on the porch.

"I came over," she announced. "I own the first mortgage on this house and lot, and according to my notion it ain't worth the first mort-

gage, let alone the second. I expect to have to foreclose on it sooner or later. What's your name?"

"Fanning!" said Mrs. Fanning haughtily. "I presume you are Mrs. Whiggin?"

"Plipp! Plipp!" said the Whiggin sharply. "I married Bill Plipp, and if there was ever a worthless man in this world it was Bill Plipp. Your baby cry much at night? All the newcomers have babies. It's a shame the way outsiders are crowding in. We Whiggins settled here in 1689, and we've been here ever since. Have you got much furniture?"

"We couldn't have much in our flat," said Mrs. Fanning. "Our flat was very small. We expect to buy more when we find just what we need."

"Well," said the Whiggin, "the less you have the better, and you can take my word for it. This house is like to fall down over your heads any time the wind blows. I tell you so as a Whiggin, and I hold the first mortgage on this house. If you let the movers set down any furniture with a bump in that front bedroom the whole parlor ceiling is going to fall down on your heads. Got any water in the cellar yet? Well, it has been a dry season; you'll have plenty when it rains. I guess you haven't tried to open the upstairs windows yet, have you? They won't open; the walls settled all askew. I smell gas, and no wonder; those cheap fixtures leak at every joint! At every possible joint! I dare say you'll all be found dead in your beds some morning. I'll run over every morning and see."

This was cheerful. Maggie had been standing open-mouthed with the pail in one hand and

the mop in the other, and now she sniffed at the air violently and started for the door.

"Where's that girl going?" asked the Whiggin. "If she's going to get water to scrub the bedroom floors you might as well tell her not to do it. Every drop will run through and soften the ceilings below, and down they will come. Not that I care. My first mortgage is on the land, and if you prefer to have the ceilings come down, well and good! Your taste may run in that direction. I hope you don't mean to try building fires in the fireplaces. Don't try it. You'll set the house afire as sure as fate. It will be a blessing if the range don't

puts her name up, and I'll put up yours. We've got to put a roof on the club house, and we'll take in almost anybody that can pay the initiation money. What's your first name?"

Mrs. Fanning was gazing at the Whiggin with fascinated eyes.

"Mary Fanning," she said meekly.

"Well," said the Whiggin. "I've got to be going if I want to get your name up at this afternoon's meeting, and you'll be lucky if they don't blackball you, but maybe they won't, seeing as they haven't seen you yet."

She paused at the door.

"I'm going to send you a day's-work woman right away," she said. "She'll be here in half-an-hour, and don't pay her a cent until I say so, for she'll overcharge you as soon as she sees you look green. Give me that receipt the gas company gave you for your deposit. I'm going to get that money back. Those gas people are thieves and robbers, and a pretty chance you would have to object to an overcharge

with the baby in her arms, mounted the stairs. One van man carried the bed up the stairs while another slowly lowered the dresser to the green that edged the narrow walk.

There was a sudden rending, tearing noise in the house, and a cloud of white dust issued from the open front door; with it came the van man.

"Say, boss," he said, "that there parlo' ceilin' of yours has fell down. I wasn't doin' nothin' but walkin' across the bedroom floor, an' down she come!"

Mr. Fanning started for the door of his house, but a man laid a hand on his arm, and he turned. It was a small man with a pointed nose, like a rat.

"Excuse me," he said. "Excuse me, but if you are Mr. Fanning, my name is Philander Whiggin. My sister Cornelia telephoned me a couple of minutes ago that you were moving in, and you'd be liable to need me."

"No, thank you," said Mr. Fanning. "These men can do the unloading. And I'm very busy.

One of my ceilings has just fallen down."

"Already?" said this male Whiggin. "Well, that was what I come up about. I'm a plasterer."

"Oh!" said Mr. Fanning, and then he repeated, "Oh!"

"And Jim Plipp told me to tell you he hoped you'd excuse him for being late. He's got to finish up the job he's on, but he'll be here in half-an-hour."

"Jim Plipp?" said Mr. Fanning.

"He's a plumber," said the Whiggin. "Cornelia telephoned



"Say, boss," he said, "that there parlo' ceilin' of yours has fell down. I wasn't doin' nothin' but walkin' across the bedroom floor, an' down she come."

set off the flues and burn you all to a crisp in your beds. Well, the land is worth more without this house on it. That's one good thing."

"Beg pardon, ma'am," said Maggie from the door, "but you'll have t' be gettin' some one t' take my job. I'm not goin' t' be burned in my bed. No, ma'am. So good day t' ye all!"

She vanished out of the door and down the street. Mrs. Fanning looked after her blankly.

"I could have told you that long ago, Mrs. Fanning," said the Whiggin, "and it is a blessing you had nothing in the house for her to carry off with her. Angels of heaven couldn't keep a maid in Westcote, and you might as well begin to do without now as later. The way this gas is leaking you will have a nice gas bill by the end of the month. Company make you leave a deposit?"

"They said it was customary," said Mrs. Fanning, gazing at Mrs. Whiggin-Plipp with something of the awe that had been in the voice of the real estate man.

"Customary fiddlesticks!" said the Whiggin disdainfully. "They didn't like your looks. But you'll look worse long before you ever look any better. There never was such a place for malaria. You'll all be soaked full of malaria in a month. We Whiggins settled here in 1689, and there hasn't been a Whiggin without malaria from that day to this. Or a Plipp. I married a Plipp—Bill Plipp—and he was plumb full of malaria. Do mosquito bites poison you?"

"I—I don't know," said Mrs. Fanning meekly.

"You'll know soon enough!" said the Whiggin. "There are millions of mosquitoes here; you'll be bit to death! There's one on that child's nose now!"

She stepped briskly across the room and slapped the baby on the face, and the baby cried—as a baby should when it is slapped.

"If you holler every time a mosquito is slapped on you," said the Whiggin, "you won't do anything but holler! You'd better let me propose your name in the Ladies' Civic Union right away. It is the only club fit to belong to in the village, and I don't suppose you could get in in a thousand years if a Whiggin didn't propose you. They'll let anyone in if a Whiggin

if you had a deposit there. They would shut off your gas and pay their bill out of your deposit. We Whiggins settled here in 1689, and I'm not going to have anybody that I have a first mortgage on, robbed by the gas company. You'll need all you've got to pay interest!"

The Whiggin tripped cautiously out of the hall and across the porch and was gone. For a full minute Mr. and Mrs. Fanning stared at each other speechlessly, and then they glanced around at the faultlessly clean wall paper and the faultlessly white ceiling. It was as if a talkative nightmare had held them in thrall and then suddenly vanished.

"Well!" said Mr. Fanning at length.

Mrs. Fanning drew a deep breath.

"Now, don't let her worry you, Mary," said Mr. Fanning. "We will not let her inside the house again. I know what she is." He tapped his forehead. "She is one of those slightly demented, poor creatures, living alone and with a brain full of hallucinations. Old families, where there is much intermarrying, often have such members. As for this house—"

"Say, boss, is this where this furniture wants to come?" said a voice, and one of the van men put his head into the parlor.

"Yes," said Mr. Fanning. "Mary, will you take the upper rooms and show them where things go? I'll take the lower floor. Now that bed—"

Mr. Fanning ran out to the van, to superintend the unloading of the precious brass bed, his best piece of furniture, and Mrs. Fanning,

"George?" came the voice of Mrs. Fanning down the stairs. "George! The water simply runs out of this bath-tub onto the floor like a river! Can't you get a plumber?"

"One coming, Mary!" he called, and then he asked the male Whiggin, just a little sarcastically, "And where are the rest of the Whiggins? Where is Joe, or Pete, or Jake?"

"Oh," said Philander Whiggin, "you mean Ed. Whiggin! Ain't he got here yet? I guess he stopped for his plane."

"His plane? What for?"

"Why," said Philander, "Cornelia telephoned him you'd want him to plane off your doors and windows so they would open and shut."

"Tell me!" said Mr. Fanning. "What is Cornelia? Is she the local Providence?"

"Well," said Philander, "I don't like to say nothin' against my own blood, but Cornelia Whiggin is an all-fired, eternal talking-machine and butter-in. Now, I know my business. I'm a plasterer by trade, and you know your business—you own this house—but if I don't do my plastering to suit Cornelia I might as well leave town. If Cornelia takes an interest in you, you might as well have been born a Whiggin. And I can't say no more than that, can I?"

"That is the ultimate word," said Mr. Fanning.

"That's right," said Philander. "If Cornelia takes an interest in you you won't have no troubles except Cornelia. And Cornelia? Why, when she really takes a liking to you, she's worse than all the other troubles put together."

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

SINCERITY is the foundation of all good advertising. The strongest thing that can be said about an article of merit is to tell the truth about it.

To the average man, advertising is more or less a mystery. Even to the average salesman there is something about advertising that is confusing. In reality, this condition should not exist, because advertising can never be anything more than written salesmanship, designed to tell people whom the salesman cannot always reach in person the main facts about the goods marketed by the company he represents.

In this way, the prospective buyer is introduced to the product, and if the product seems to measure up to his individual requirements he will doubtless make the investigations that will lead to a sale.

Advertising is in every way parallel to a social introduction. If you meet a man somewhere who interests you very much, and you find that you and he have a great many things in common, you will unquestionably make it a point to cultivate an acquaintance that will be of mutual benefit. On the other hand, if this man misrepresents himself to you, either by direct falsehood or misleading inferences, you will grow more disappointed in him at every meeting and finally cut him off your list.

THE policy behind all Buick advertising is to tell the simple truth about Buick cars. There are so many hundreds of thousands of people in the world who need exactly the product the Buick has to offer them that if we can get the truth about Buick cars properly before them, our manufacturing facilities will never be great enough to supply the demand. And as every Buick dealer knows, this is the condition that has existed at the Buick factory for a good many years back.

It would be hopeless to tell all the good points of Buick cars in one advertisement, or in several dozen advertisements. There is the Buick Valve-in-Head principle of design to be covered. There is each individual unit of the Buick chassis to be described and explained. There is the mammoth Buick factory, with its numberless departments and its acres of floor space to be told about. There is the vast network of the Buick service system, starting with the building of the parts and going on down through the branch and distributor organizations and winding up with the individual dealers. There are the actual experiences of Buick owners in all parts of the world, each forming a definite reason for better acquaintance with the Buick product. And there are dozens of other points that must be covered if the public is to know the truth about Buick cars.

This wealth of material gave birth to the Buick Bulletin—a magazine about Buick cars, published for those who want to get to the bottom of the subject.

This magazine is carefully edited and is the principal means we have of telling the whole truth about Buick cars.

No statement is made about Buick cars in these columns that is not entirely borne out in fact. No testimonial is published unless it comes from a reliable source. No attempt is made to exaggerate any feature for the sake of adding to the force of a statement, because such a policy always has a boomerang effect. Sooner or later the truth would become known, and once the general public became aware that they had been deceived, it would result in a loss of confidence and a consequent decrease in the demand for Buick cars.

SO THE material in the Buick Bulletin is of real, practical interest to its readers, because it tells the story of each particular item much more fully than would be possible in an advertisement. For example, we not only tell our readers that Buick cars are built in our factory, but we take each part and describe its manufacture, step by step, and illustrate the article with photographs so it will be readily understood by all. When the article is finished, the reader knows just the kind of material that is used in every detail of the part, just the accuracy with which it is manufactured, just what it must accomplish before being accepted by the final inspectors. He can then judge for himself whether it meets with his ideas as to what such a part should be.

After reading an issue, one cannot help being impressed with the fact that Buick quality is a product of science and skill. After a few issues more he realizes that the thoroughness that first impressed him is really a policy, exactly followed out in every operation in every Buick department.

FOR you may be sure that Buick cars are designed and built with just as definite a policy as that which lies behind Buick advertising. Nearly twenty years of building and selling Buick Valve-in-Head cars has given the Buick Motor Company rare insight into the needs of motor car users, and where a man decides that Buick cars are not suited to his wants, it is because of some extraordinary condition. The range of service afforded by the present Buick line is almost unlimited.

These are the facts that the Buick Motor Company presents to motorists—broadly in its advertising, and in detail in the Buick Bulletin. Particular emphasis is laid on the usefulness of Buick cars, because their economy and stability enable business men to secure maximum results with the minimum expenditure of money and time.

With the vastly increased use of motor cars in business, the business man has grown to appreciate more fully the possibilities that lie in the motor car for increasing his personal effectiveness. It is just a question of selecting a car that is capable of constant and varied use, backed by service that is both prompt and reliable.

The Buick Motor Company has always proceeded along these lines, keeping the balance between design, manufacture and dealer service nicely adjusted to the best interests of all concerned. But there are many people in every territory who are not familiar with these facts, or who at least know them only in a vague way.

You can reach these people partly through newspaper and magazine advertising. They can get the specifications and body types from the catalog or from an inspection of the cars. But you can get the big, vital Buick story to them in only one way—through the medium of the Buick Bulletin. The critical buyer is not satisfied with bare statements. He wants to know the grounds for making those statements.

FOR example, you might tell a man that the Buick motor derives its power and economy from the fact that it represents the highest development of the famous Valve-in-Head design. To an automotive engineer that would be sufficient, but to the man who needs a motor car to help him in some other line of business it may be almost meaningless. But if you show him the various features of the Valve-in-Head design, particularly the fact that it has less water-jacketed space than any other type of motor, his common sense will quickly tell him that the less water there is to radiate heat, the greater will be the percentage of fuel converted into usable power. And you won't have to tell him any more on that subject.

The same process applies to every part of the Buick car. There is always a best way to do everything, and what the prospective buyer of a motor car wants to know is the plain truth about the car he is to buy.

Hence the Buick advertising is never sensational and exaggeration is frowned upon as a matter of good business policy. We at the Buick factory have studied the building of one type of motor cars for nearly twenty years. Several hundred thousands of these cars have been placed in the hands of owners. They have given great satisfaction to their owners and the demand for Buick cars has increased with every passing year. They have always been built according to proven principles of design and manufacture, and the sole object of Buick advertising is to make these principles thoroughly understood by the buyers of Buick cars.

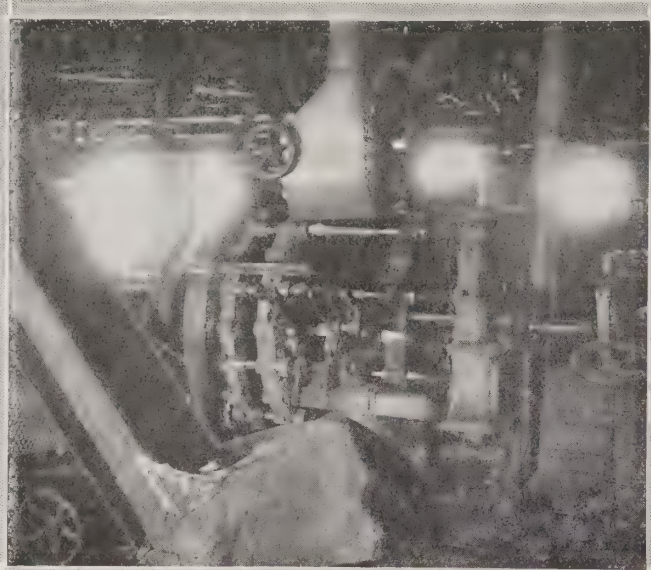
The Building of Buick Wheels

THE story of Buick wheels begins out in the fields and the groves, and Dame Nature performs the first important step in their manufacture. The growth of hickory is a slow process, covering many years, and it is this slow growth that gives the wood its close grained toughness and makes it ideal for use in spokes and felloes.

The trees are bought standing, and as only the very clearest and best hickory is accepted for use in Buick wheels, the hickory trees on many thousands of acres are used annually by the Buick Motor Company. On an average, an acre will only yield about 500 feet of acceptable wheel material.

To avoid the excessive cost of shipping the logs to Flint, they are cut up into planks at mills in the immediate vicinity. As a general rule, the planks are also cut up into billets of the right length and thickness. A large percentage of the spoke billets are also "club turned" at the mills before shipment, so that they reach the wheel factory in the form of rough spokes. The billets for felloes, or wooden rims, are shipped to the factory in the rough and in some cases the entire planks are shipped.

Arrived at the factory, the hickory is carefully stored in cool, dry storage sheds and air



Buick spokes are sandpapered automatically

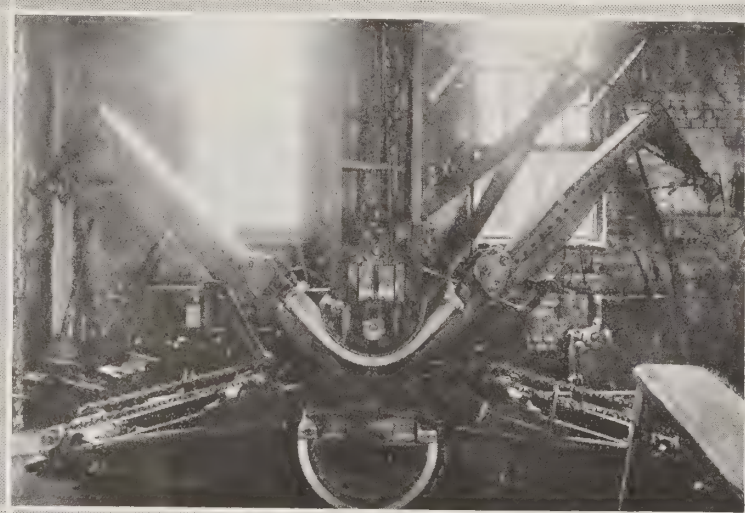
they are smoothed by revolving against a swiftly moving canvas belt coated with glue and sand. This operation requires no supervision on the part of the operator. When the spokes are sanded, they drop onto an endless belt conveyor which carries them across the factory to the inspector's bench, where they are closely

are then put on sheet metal strips, or forms, with locking devices at the ends. The whole is then placed in a big bending machine, which molds the felloes to the proper shape, and they are held firmly in that position by locking the ends of the forms together in a half circle. Two such felloes are required to make the rim of a Buick wheel.

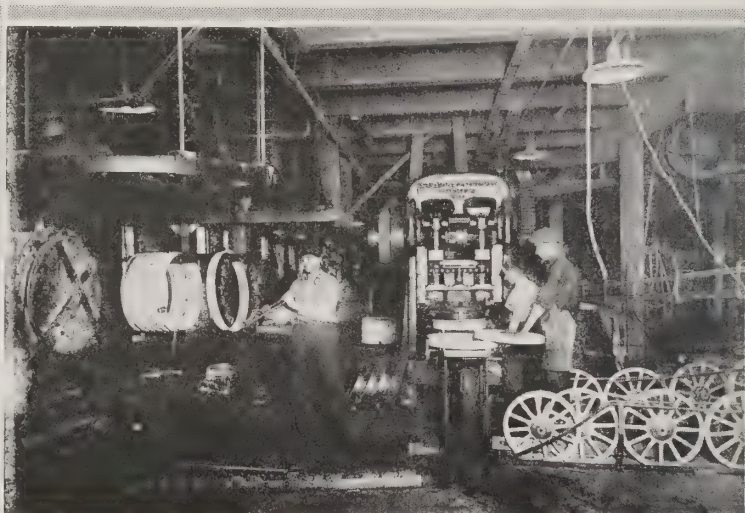
When the felloes have dried in the forms they are removed, retaining their semi-circular shape permanently. The operators then place them in a machine fitted with a buzz saw, which cuts off either end of the felloes and "equalizes" them. Strips of wood are then nailed across the ends to hold them firmly to shape, after which they are taken to the kilns for three weeks of steam drying.

The seasoned felloes then go to the machining rooms, where the edges and sides are planed smooth and the holes for spokes are bored. All this work is done by machines that hold the pieces always in the same position, so the utmost accuracy is insured. They are next sanded carefully on a sand belt and the sharp edges on the inner side removed by rocking the felloes back and forth on the belt.

The ends are again sawed off to make the circumference of the wheels exactly right, when



Forming steamed hickory billets into felloes



Pressing and shrinking on the metal rims

seasoned. The extent of these sheds may be imagined from the fact that upwards of a million club turned spokes are in storage almost constantly, to say nothing of vast stores of billets and thick hickory planks.

As required, the spoke material is removed from the sheds and club turned, after which it is carefully piled in layers on large hand trucks, with strips of wood separating each layer of spokes. These hand trucks are made to run on a series of tracks leading to the 22 dry kilns, which are located on three floors of the wheel factory and heated with coil after coil of steam pipes. A large elevator carries the trucks to the proper floor, where they are run onto a sliding platform which permits them to be placed in any kiln in the row.

The reason for locating the kilns on three floors is to economize space and handling, and permits the kiln dried material to be removed after three weeks in the kilns and delivered right at the point where the further operations commence.

By this time the wood is in perfect condition. The spokes are taken to the machine room and put in a machine with a V-shaped cutter, which miters off the ends with the greatest accuracy. The spokes are then perfectly interchangeable, and by placing eight of them together, you have the foundation for a Buick wheel, with solid, closely matched hickory in the center and perfectly equal spacing between the spokes.

The next operation is to feed the spokes into the automatic sanding machine, where

examined and then turned over to the operators who cut off the surplus length. The tenon is then machined on the outer end to fit the hole in the felloe and the spokes sent to the assembling department.

The air seasoned billets for the felloes are first planed off and cut to uniform length, after which they are put in the steam boxes and treated with live steam, which makes them pliable and ready to bend. Five or six felloes

the felloes are completed and ready for assembly.

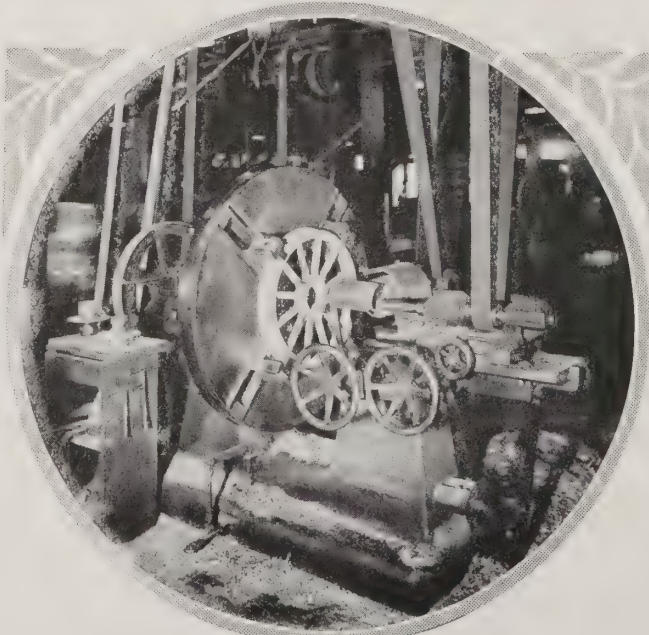
Assembly begins by placing six spokes in the holes in each felloe, in the form of a half wheel. The workmen then take two half wheels, place them together and hold them firmly in position by bolting a false hub to the surface formed by the inner ends of the spokes.

The wheels are then placed in a machine and made perfectly round by planing the outer edge. They are then put in gravity conveyers and rolled to the furnace where the outer bands are heated and shrunk on. This makes the wheels quite solid and permits of the removal of the false hubs at this point.

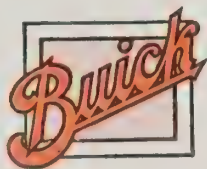
The holes are then drilled for the bolts and valve stems, and the T-bolts over the two joints in the felloes on each wheel are firmly riveted in place. The next operation is in a machine which bores a perfectly round hole for the hub and planes off both sides of the center surface of the wheel at the same time, after which these surfaces are sanded smooth. The holes are then bored for the demountable rim bolts and the wheels receive their finishing polish by hand.

A coat of special Buick primer is now applied, to keep the wood from absorbing moisture and to provide a suitable foundation for the painting operations.

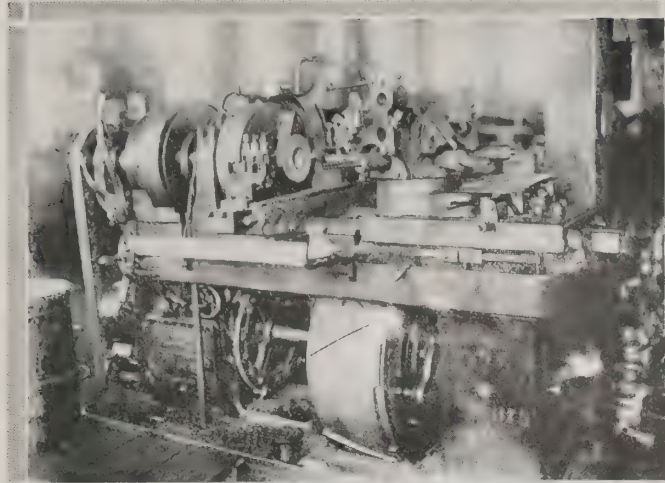
In the meantime the hubs have been prepared in the hub-making department. The rough hubs come from the foundry in the



Facing off the center of the wheel



When Better Automobiles
are Built,
Buick will Build them



This turret lathe bores and reams the hub, turns the outside and faces the flange

form of malleable iron castings and are stored in the stock department. By the use of automatic machinery, Buick hubs are completed in a few operations.

The first operation bores and reams the inside of the hub to accurately fit the bearing, turns the outside of the hub to fit the wheel, and faces off the hub flange. The hub then goes to the inspector for checking.

The second operation drills the eight holes for hub bolts simultaneously.

The third operation prepares the inside of the hub for the outer bearing and the outside of the hub for the hub cap. Thirteen tools work on the hub during this operation without once removing from the machine.

The hub is again inspected, after which the outside of the flange is neatly faced off in a lathe. The bolt holes are then counterbored and the liners for the bearings pressed in on a hydraulic press. Then the threads for the hub caps are cut and the hub finally inspected.

All material in this department is handled in the most modern manner, with platforms and the elevating truck system.

Upon delivery to the assembly department, the hubs are fitted to the wheels and the bolt holes drilled through the wood, the bolts being securely fastened by a pneumatic riveter. The brake drums are then bolted to the rear wheels, the speedometer sprockets fitted to the front wheels and the demountable rim bolt parts put on.

The wheels are then given a rigid final inspection and loaded on trucks for the shipping department, where they are sent to the Buick final assembly building to be put on the cars.

The final chapter takes place in the demountable rim department, where the Buick experts have worked out some very ingenious machinery. The raw stock comes to this department in the form of long strips of heavy sheet steel of the proper width. First one end is cut off square by a powerful machine, when the strip is turned end for end and placed in a guide to accurately determine the length of the strip, when the other end is cut off in the same manner. This insures the correct diameter of the rim.

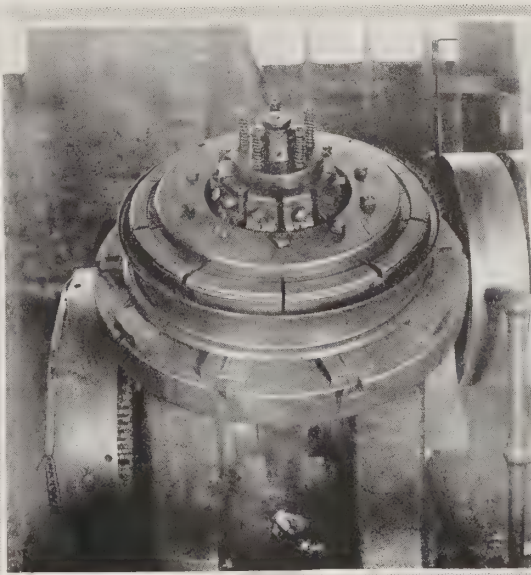
The strip is then run between rollers and roughly formed to a circular shape, when it is put into one of a battery of electric welders and firmly welded together. The rim is now in the form of a flat hoop, which is the basis for a very ingenious gravity conveyor system. From this point the rim rolls on inclined conveyers from one machine to another until it is finished.

The next operation is to cut off the "flash," or excess metal resulting from the welding process. This is done with a double cutter which trims both sides of the joint at once. The joint is then ground smooth on all sides on an emery wheel.

Into the conveyor it goes again, to the machines where the beads on either side of the rim are rolled on. These machines were designed and developed by the Buick experts, are automatic in action and perform their work speedily and with accuracy.



All the holes in Buick hubs are bored by this multiple spindle drill in a single operation. The drill points enter holes in metal guides, insuring the utmost accuracy



Buick rims are expanded to size and made perfectly round on this machine by means of an expanding die made in sections



This "upsetting" machine is employed to reduce the circumference of Buick rims that are slightly oversize



This machine cuts the keyway in the hubs with long saw-toothed cutters

The rim is next expanded to size and made perfectly round on a machine fitted with an expanding die, which operates from the inside of the rim. After this operation the welded joint is tested and the rim inspected for size. If it is too small it goes back to the die for further stretching, and if too large is placed on an "upsetting" machine to have the circumference reduced by compression from the outside.

The depression for the lock plates is then stamped in the rim, opposite the welded joint, and the holes for the lock plates punched. The rim is then cut in two at this point, the ends filed smooth and the lock plates firmly riveted on. The rim is then locked together and the burr ground off the rivets and lock plates. A hole is punched for the valve stem, and after inspection the rim is sent to the galvanizing department.

In the galvanizing department are large vats of special metal cleaner, into which the rims are placed to remove every particle of grease, grit and dirt. As a further precaution, the rims are taken from the cleaning vats and "pickled" in tanks of sulphuric acid.

The surface thus being prepared in the most careful manner, the rims are put in the galvanizing tanks and electrically plated with a combination of zinc and aluminum, so that every part of the rims—lock plates, rivets and all—are coated with the non-rust coating.

The rims are now complete, save for the final inspection. This last inspection is made by men in the employ of the tire companies, stationed right in the Buick plant, to insure that each and every Buick rim is made in such a manner that it will cause no injury of any kind to any part of the tires used on them.

After the final inspection, the rims are ready to perform their part in the makeup of Buick wheels.

From the number and character of the operations involved, it is readily seen that unusual precautions are taken in the Buick factory to insure that Buick wheels are built in such a manner that they will satisfactorily perform the important functions they have to play in actual service.

It will also be seen that the question of wheels is not one to be lightly dismissed. The wheels have to bear the brunt of road shocks of every description, year in and year out, and the material and workmanship entering into the manufacture of wheels is just as vital to the car owner as those in any other part of the car.

It is hardly necessary to impress upon the car owner just how much depends upon wheels in the way of personal safety for himself and his passengers. For wheels are always classed with the other big factors of safety when discussing motor cars—axles, brakes, frame, steering mechanism. Nothing can be left to chance in building wheels for motor cars, and too much attention cannot be paid to the various details.

The Buick engineers realize this and have left no stone unturned to make Buick wheels as perfect as human ingenuity can make them.

Buick



EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK



the Car of Achievement

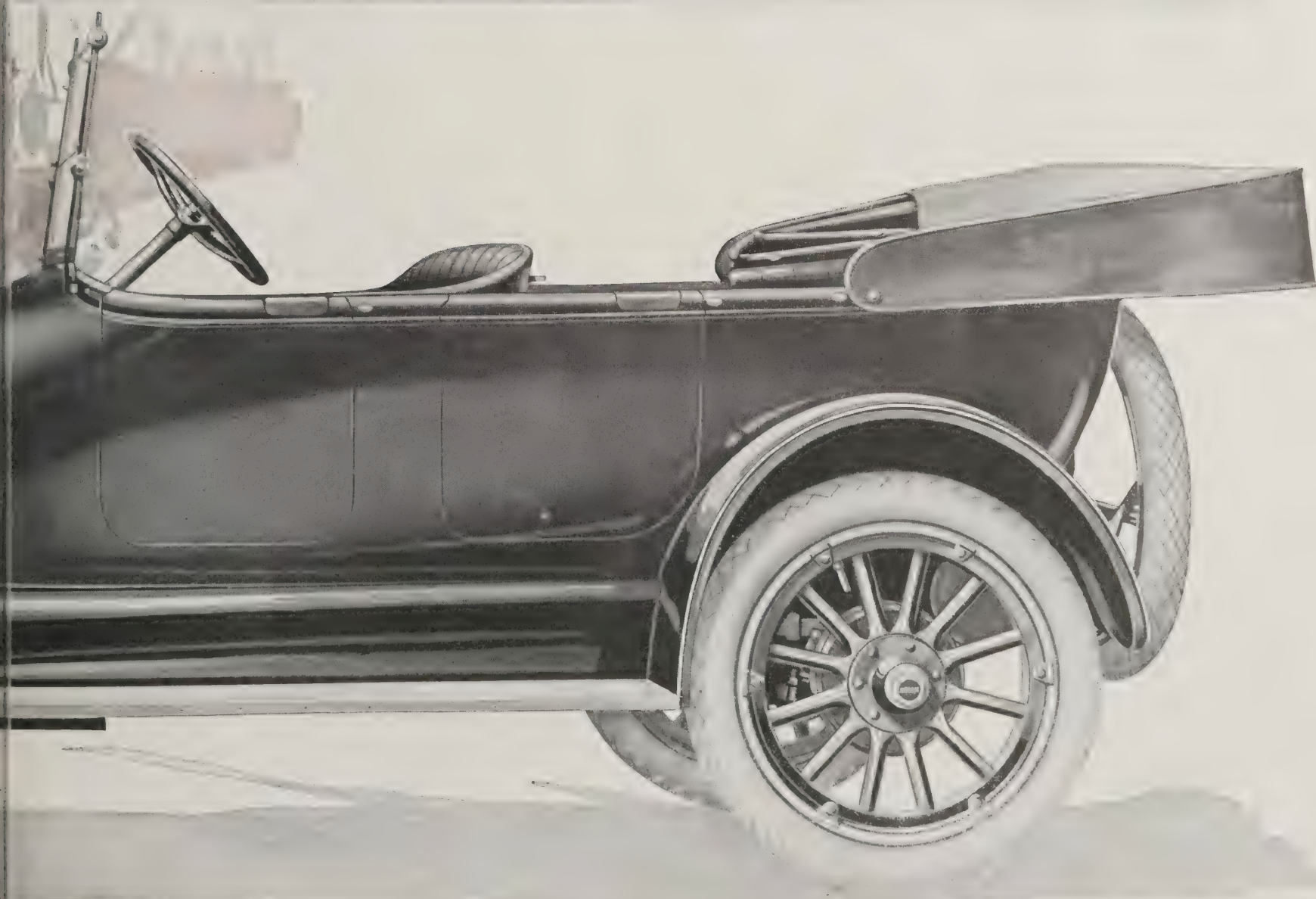
THE Buick Valve-in-Head motor car is rightly termed the car of achievement. Its history is written in results. Like one who has lived to serve, it is known and valued for the things it has done and the things it has made possible.

Springing from the great Valve-in-Head principle, it has developed the possibilities of that principle so completely and consistently as to acquire a remarkable range of serviceability.

To speak of power is to mention but a single Buick attribute. And the same is true of economy, reliability, strength, performance, balance, convenience.

All these things the Buick possesses in a high degree, yet in its design and manufacture one is not sacrificed for another. They all combine to make it the car of achievement, the favorite among busy men who want things done quickly and certainly.

Among the nine Buick models there is a car exactly suited to your needs.



Buick Cars in the World's Business



When you think of Jamaica you think of ginger, and here's the establishment that is helping to put Valve-in-Head ginger in all sorts of business enterprises in Kingston, the metropolis of that fruitful island. The firm of Motor Car and Supplies, Ltd., ranks high among the motor car dealers in the West Indies and are highly pleased with the results obtained by Buick cars in tropical service.



The Reno Buick Co., Buick dealer at Hutchinson, Kansas, has made a wonderful name for itself among motorists, even as far away as New Mexico and Texas. It is one of the most complete establishments in the country, from a service standpoint, with large stock department, body building department, top department, machine shop, paint shop and enameling department, all equipped to do the finest kind of work.



The operations on the great western front in France may overshadow those on the Italian front in point of size, but they can no more than match the latter in deeds of heroism and bravery. The following letter from Eddie Waterman, written from Foggia to his friends in Fresno, Calif., relates a thrilling incident with a happy ending for one of the American boys in the Italian aviation service.

"Our outfit has surely been fortunate, as no one has so much as been scratched yet. We have smashed twelve machines flat and seriously damaged several others. The last forced landing, however, was quite amusing and resulted in the total wrecking of the plane."

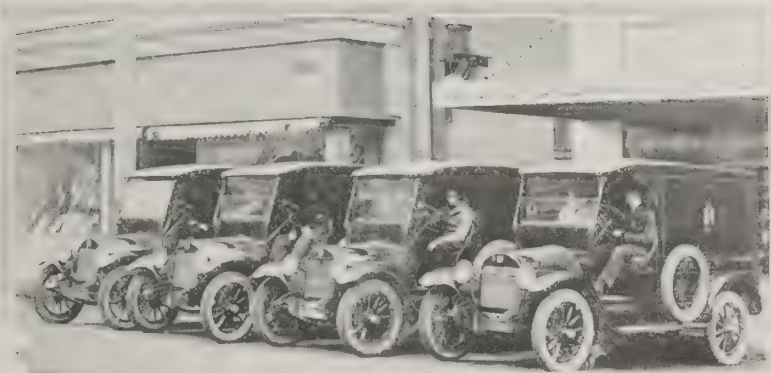
"A boy from Chicago was up 13,000 feet, above the clouds, and before he realized it darkness had come on. It gets dark on the ground before it seems dark up high. He started diving through the clouds and his engine stopped. When he got through it was so dark he couldn't see where he was, and as his engine was dead he simply had to land somewhere. He landed in the front yard of a farm house, the only one in five miles, went between the barn and the farmhouse with one foot to spare on each side, going at least 80 miles an hour, and was headed right for the well, which in this country is quite formidable. He hit a big two wheeled cart with his left wing. This swung him around and he stopped with the nose of his machine right in the front door of the house. The plane was a total wreck. The next day I took the Buick and went over to the wreck to supervise the dismantling, taking a lot of good pictures, some of which I will send you in a day or so."



Mr. B. P. Lisenby, of Mt. Vernon, Illinois, writes: "I have been driving Buick cars since 1907 and use them in the livery business. I find after nine years' experience they are the cheapest cars to operate and the mechanical troubles are much less. I have always been able to get from 20 to 23 miles per gallon of gasoline on the light cars and 18 to 19 miles on the larger models. My tire mileage has been excellent. I have at present three Buick cars—Models C-25, 37 and E-49. If I were going to buy a thousand more I would get all Buicks."



When the Williamson Auto Co. took the agency for Buick cars three years ago in Mt. Vernon, Illinois, there were just two Buick cars in the county. Two years later the company incorporated for \$25,000 and this year it was necessary to build another addition to their building, 160 feet square, with the very finest facilities for taking care of both sales and service. Mr. Williamson's first place of business was of the most modest character possible, but the new establishment is perhaps the most modern and best equipped to be found in that territory, with accommodations for men and women patrons and tourists.



Miller and Paine, of Lincoln, Nebraska, operate one of the leading dry goods stores in the Middle West. They have solved their delivery problems with Buick E-Four Light Delivery cars, as shown in the insert. These light Buick Valve-in-Head cars, being fast and economical to operate, have proven ideal in handling the many deliveries that a store of this character is called upon to make to all parts of the city.



Macdonald



One of the most familiar figures on Washington's improved highways is Mr. C. M. Dodds, who covers practically the entire state of Washington every month in the interests of the Chanslor and Lyon Co., of Seattle. Mr. Dodds has driven several other makes of cars, and the Roadster shown in the picture has already traveled more than 18,000 miles. He says he would hate to have to get along without his Buick Six.



Here is the fine new building of the Lewiston Buick Co., of Lewiston, Me. The building was completed last August and fronts on both Park and Middle Streets, which makes an ideal arrangement for service purposes and the easy handling of cars. The attractive showroom is 50 feet square and decorated in excellent taste. The service entrance on Middle Street opens into a service room 50 feet square. In addition to the four floors of this spacious building, the adjoining building is used as a machine shop, garage and service stock department. Mr. Carl L. Curtis is the efficient manager of the Lewiston Buick Co.



The Howard Automobile Co., of Los Angeles, has just completed a Buick branch in Pasadena which is a model of completeness, both from the standpoint of service and beauty. The coolness of the mosaic floor and light woodwork is further added to by handsome ferns and palms, and the walls are adorned with immense enlargements of actual photographs, showing the Buick car in a variety of settings and classes of service.

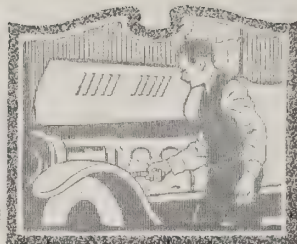


For thirty-five years A. B. Shetter has been identified with the business life of Middletown, Ohio. During the past eight years he has handled Buick cars in that city and has earned for himself the sobriquet of "Little Napoleon." He started in rather a small way and now has the finest establishment in Middletown, and is one of the largest dealers in that section of the country. He is a thorough business man and very popular among the motor car owners.



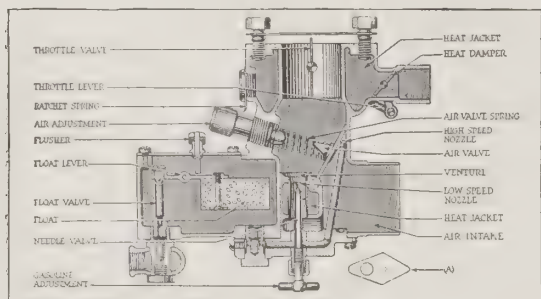
Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Warm Weather Carburetion

WITH the advent of warm weather, there is one very essential point which is easily overlooked by the average automobile owner, and that is getting too much heat to the carburetor. The Buick Carburetor is provided with a flexible hot air tube, which is connected with the exhaust manifold and diverts the hot gases from the exhaust manifold through the jackets around the carburetor and out at the bottom through the diamond shaped shutter (a). These hot gases warm the gas chamber in the carburetor, thus aiding in vaporizing the fuel, and the mixture enters the inlet manifold in a thoroughly vaporized condition, thus giving the best results both as



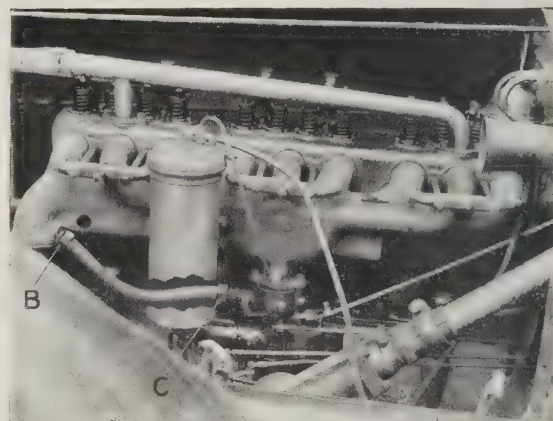
to power and economy even during the coldest weather.

In order to obtain the best results during warm weather, the flexible hot air tube from the exhaust pipe to the carburetor should be disconnected. The extra heat that is needed to vaporize the gasoline during cold weather is no longer required and in the summer time may result in an overheated mixture, which will reduce the power of the motor very perceptibly.

Before removing the flexible hot air tube, it is well to clean out any soot that may have accumulated in the hot air jacket of the carburetor. This is easily and quickly done by stopping up the opening in the exhaust pipe back of the muffler and speeding up the motor for a minute or two. There is a small diamond shaped shutter (a) on the bottom of the carburetor, which should be opened by means of loosening the set screw. The pressure will thus be diverted through the flexible hot air tube and into the hot air jacket, passing out through the opening uncovered by the diamond shaped shutter. No attempt should be made to put anything into the jacket to loosen the soot, as it will blow out readily if the above directions are followed. Be sure to remove the stopper from the exhaust pipe when finished.

Next disconnect the flexible hot air tube at (b) and (c), stopping up the hole in the exhaust pipe at (b) with a pipe plug. The flexible hot air tube should be stowed away in the tool box or some other convenient place, ready for use when the cold weather comes again.

Of course it is unnecessary to use the dash choker in starting a warm motor. In fact, the choker should be rarely used during the warm weather, and after the motor is started it is best to set the lever at "cold" on the dial indicator and drive with it in that position.



OWNERS ARE PROUD OF BUICK SERVICEABILITY

Tests Buick In-Built Service

MR. R. H. BENFORD, of St. John, Kansas, gave his Buick E-Six-45 a severe test in the great January blizzard this year, incidentally proving his own prowess as a driver under extremely adverse weather conditions. He writes:

"Sunday, January sixth, 1918, I started from St. John, to drive to Camp Doniphan, Lawton, Okla., reaching Wichita Sunday evening. I waited until Wednesday morning before resuming the journey, reaching Lawton that evening, the last 100 miles being very rough and stony. I was told that I could not pull these hills except on low, but I did make the entire distance on high, with no apparent effort.

"At Lawton I was snowbound, could not return north, so Friday morning continued south, reaching Ft. Worth. A snowstorm overtook me and the road was said to be impassable.

"Saturday at noon I started to Dallas, 35 miles away. The first 30 miles I traveled over a pavement at from 45 to 60 miles per hour. Then I struck snowdrifts, in which I found 30 odd cars stuck or abandoned. These drifts extended two miles. I undertook to go through this and made all but the last 200 yards unaided, but then had to shovel my way through for about 25 feet, then went on without help. At Dallas I was held for two weeks by a big snow.

"Wednesday, January 23rd, I started north, pulling through mud from four to five inches deep the entire distance to Oklahoma City, which I reached Friday evening. Saturday I drove through rain and mud as far as Hunnewell, Kansas. Then the road became better but the thermometer stood below zero the balance of the distance to Wichita, which I reached about 10 o'clock Saturday night, with the car covered with a coating of ice, wheels a solid cake of ice and icicles hanging from the top in front of the windshield. I left the car in Wichita one week and brought it to St. John Sunday, February 3rd.

"In the 25,000 miles I have driven a Buick over roads in all conditions, this is undoubtedly the most severe test I have ever made. The condition of the car is most remarkable. The total distance covered was 1728 miles, total gas consumption 103 gallons, oil 18 quarts,

grease 5 pounds. After cleaning the car with nothing but water, almost all water marks and spots have disappeared. Removal of crankcase shows bearings in fine shape and in going over all bolts am unable to find one loose, therefore, this trip did not cost anything in repairs. You can't beat the Buick for 'Good Service'."

Buick Four Covers Big Territory

MR. WINTHROP WOODRUFF, commercial salesman of Friendship, Wisconsin, bought a Buick Model D-Four-34 in January, 1917. "In May," he writes, "I started out in my territory in Minnesota and will say I had splendid success. I traveled about 12,000 miles. If I were to buy another car it would be a Buick."



The American Red Cross

Cares for Our Soldiers and Sailors Wherever and Whenever that Care May be Needed

It purposes to shorten the war by alleviating the suffering and strengthening the morale of our allies, and to lay foundations for an enduring peace by extending to our allies a message of practical relief and sympathy; carrying to them an expression of the finest side of American character.

The Red Cross is an all-American, largely volunteer organization — authorized by Congress, headed by President Wilson, its accounts audited by the War Department, enthusiastically indorsed by General Pershing.

Your help is needed — give until your heart says "stop."

American Red Cross Second War Fund

From a Baltimore Booster

MR. JOHN W. STYNE, real estate dealer of Baltimore, wrote under date of February 4: "In looking over your Buick Bulletin, which I look forward to with pleasure each month, I find that you have not published any letters from users of Buick cars in Maryland, where there are so many of them on the streets of Baltimore. Therefore I want to give you a little personal experience.

"I have my second Buick, which is a Model C-37 and which I have driven 22,224 miles. My repair bill with the Auto Outing Co., who are your Buick agents here, last year was \$9.45. They are the only people that I ever let repair the car, and by the way, you have an excellent agency in the Auto Outing Co.

"I have been instrumental in persuading a number of my friends to buy Buicks and have yet to have one of them criticize me for my advice. We never see a dissatisfied Buick owner.

"If I could get your agency here to think that my 37 is worth as much as I think it is I would perhaps trade it in for a Six-45 this spring. But the chances are that I will not be able to convince them and therefore, expect to run my car another year."

What's Your Record?

MR. JOHN T. NEAL, of Buffalo, finds his five-passenger Buick Four extremely economical. He says: "In your Bulletin, Mr. J. P. Vanduzee, of Cairo, Ga., gives the upkeep of his Buick Six. He hasn't anything over my Buick Four, which I have driven 5274 miles. Following is the upkeep of same for the above mileage:

Gasoline, 254 gals. at 25c.	\$63.50
Oil, 7 gals. at 75c.	5.25
Gear oil75
Cup grease25
One steel wheel key and felt washer for rear wheel75
	<u>\$70.50</u>

"While he is in the country, I am in the city. I also use a trailer. The above figures 1 1/3c per mile. I also traveled 20 2/3 miles per gallon of gasoline. She will climb anything in sight."

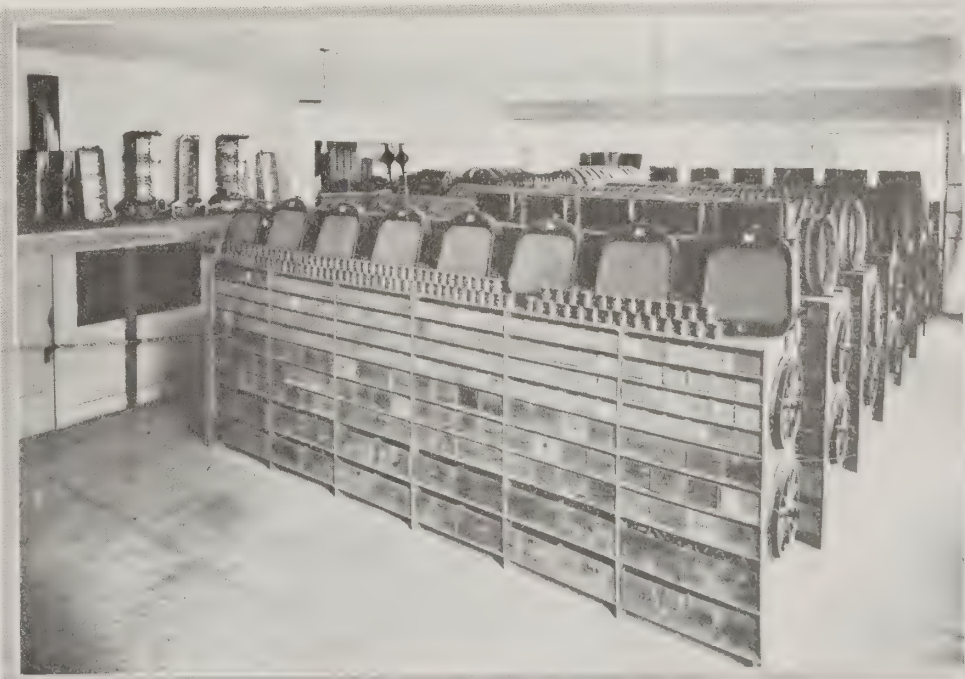
The Buick Branch San Antonio Texas



The Buick Branch in San Antonio is located at the head of Automobile Row, on Avenue C, where it is most convenient to owners and dealers alike. The entrance to the local garage and service department is on the side, while that to the salesrooms and offices is on the main street. The parts department and machine shop occupy the second floor.



The salesroom of the Buick San Antonio Branch is one of the most attractive salesrooms to be found anywhere in the country. The floor is done in mosaic tile, the wainscot in marble and the wall panels are enriched with mural paintings. This room is 55 feet long and 45 feet wide, lighted on two sides by large plate glass windows.



This picture shows the compact method used by the San Antonio Branch for storing radiators, pistons, wheels, crankcases and small parts, while the picture in the circle at the top shows how the springs, sheet metal parts, crankshafts, etc., are handled. This department is a model for neatness and convenience.

UNINTERRUPTED use of your motoring investment" is the Buick slogan, and the spirit behind this slogan is principally what has given birth to the Buick factory branches throughout the country. There are other phases that make the branches valuable to both owners and dealers, but service is the biggest and the one to which the Company points with the most pride.

Without these factory branches, Buick owners would be taken care of, as service goes, much better than the vast majority of motor car owners. But with the backing of this strong chain of complete factory branches, Buick dealers are in position to render uniformly excellent service in every nook and corner of the country.

The San Antonio branch was completed last winter. The building has a frontage of 75 feet and a depth of 140 feet, with two stories and a full basement. It is of fire-proof construction and embodies the latest ideas in ventilation, sanitation, lighting and convenience. The entire front, as well as thirty feet on the side, is plate glass.

The main sales floor is 55 feet by 45 feet, beautifully decorated and furnished. The floor is tile mosaic, with a handsome marble wainscoting, and there is a lobby in the rear affording easy access to all departments, including the parts and service departments on the second floor.

Directly off the salesroom lobby are the general offices, the service department offices being on the second floor. In the rear of the general offices, is the local garage.

On the second floor, at the front is the parts service department. The parts department has been modernized in every way and each of the hundred thousand or more parts is systematically and conveniently listed.

The local service department lies directly behind the parts department. Mechanical appliances of every description have been installed.

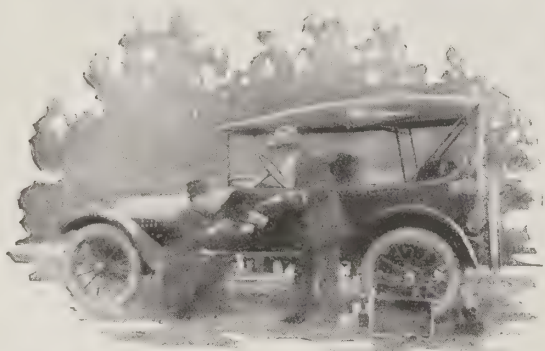
The Branch is at the head of Automobile Row on Avenue C. The building was planned and built for the purpose of properly displaying the Buick Valve-in-Head cars and to insure that the rapidly increasing numbers of Buick owners can always get the best of service.

A network of railroads places the Branch within easy striking distance of every Buick dealer in the surrounding territory, for the prompt replenishing of parts stocks and filling emergency orders. The dealers themselves co-operate with the Branch in every way by maintaining stocks of parts in their own bins, and these stocks are regularly inspected by the service men traveling among the dealers under the direction of the Branch.

The Buick Motor Company assumes that busy owners expect their cars to be kept in the same order as any other part of their business equipment, and that when service is needed it will be much more appreciated if given quickly. The factory branch system has enabled the Buick dealers to speed up service to a remarkable extent.

Without exception, this is one of the cleanest and best arranged branch houses to be found in the country.

Long Tours Test Buick Endurance



MR. S. B. DAVIS, contractor and builder of Shawnee, Okla., recently wrote us of a most interesting trip made last fall in his Buick D-Six-45. It is particularly noteworthy, as Mr. Davis up to that time was rather an inexperienced driver. He says:

"This is my sixty-first birthday—will not tell you how old my wife is, she is a 'conscientious objector,' but I want to ask you one question: 'Is the Buick car fool-proof?'"

"I have been trying out the D-Six-45 I bought of you last April and have about concluded such is the case. This was my first car and I had never had a hand on a steering wheel before.

"Up to the first of September, I had driven 1508 miles and I then decided to take a little trip as I had not driven more than fifteen miles from home up to this time, so we headed for Oklahoma City, Tulsa, Kansas City, and Omaha, where we crossed into Iowa for a three weeks' visit, then to Indiana and from there to Niagara Falls. From here we drove to Scranton, Pa., for a week's visit, there on to Albany, N. Y., where we crossed the Hudson River and headed for Springfield, Mass., which was our objective when we left home.

"After spending three weeks there and visiting all the New England States except Rhode Island, we drove down the Connecticut valley through Hartford and New Haven and along Long Island Sound to New York City, crossed the Hudson at the 42d Street ferry into New Jersey.

"After spending a few days in New Jersey and New York, we headed for Washington, D. C., via Philadelphia and Baltimore, where we spent several days, leaving there November 21 for the west via Frederick and Cumberland, Md., Uniontown, Pa., and Wheeling, W. Va., where we crossed the Ohio River into Ohio, and

crossed the state, passing through Columbus and Springfield, following the old National road through Richmond, Ind. We traveled through central Indiana to Danville, Illinois, and from there to Hannibal, Mo., via Champaign, Springfield and Jacksonville.

"We traversed Missouri from N.E. to S.W., coming out of the state near Ft. Scott, Kansas, where we turned south to Parsons and on to Tulsa, Oklahoma. Our car registered 7750 miles on reaching home, showing that we had traveled 6242 miles on the trip. We have three of the original tires, one of which has never been off the car since we bought it. We traveled from Oklahoma City to Tama, Iowa, 1069 miles, on 57 gallons gasoline, a little more than 18 $\frac{3}{4}$ miles per gallon.

"From Morocco, Indiana, to Clark's Summit,



home in Ashtabula and traveled west by way of Chicago, Minneapolis and the old Cody road.

The car used was a 1911 Buick model 21,

which had been fitted out for the trip with every possible convenience for living exclusively in the open. A tent, plenty of warm bedding, clothing and kitchen utensils were conveniently stowed away in trunks and boxes carried on different parts of the car.

Time was no object. Their objective was the Pacific coast and they made up their minds to have as much fun as possible in getting there. Their movements were not hampered by a schedule. Wherever night found them their tent was pitched, a fire was lighted and the savory odors of supper soon lent zest to appetites that needed no coaxing.

As Mr. Auger puts it, they left home apparently well, but after several weeks on the road their health and appetites improved to such an extent that they claimed something must have been wrong with them before.

Frequently it was found most convenient during the journey to make their camps in school yards, as this assured them of good drinking water.

They found the roads fairly good, as a whole, although some stretches were muddy and rough. The scenery was wonderful, especially near the Coast and after crossing the Rocky Mountains.

After arriving in Seattle they toured down the Pacific Coast through California and Mexico and returned to Seattle to spend a few weeks before returning east.

All members of the family are highly enthusiastic over the trip and recommend a similar one to anybody in need of a change for tired nerves and bodies.

Now is the time to plan your vacation trip. This is the year of all years when a vacation is most necessary.

Conditions make it imperative for most men nowadays to do the work of two, as nearly as possible. Every industry feels the shortage of men quite keenly, and about the only way to overcome it is for us who are "over here" to speed up.

Our patriotic duty is to multiply our own productiveness—to make our efforts count big every single day.

And to do this we must keep in good physical trim.

The boys in the front line trenches are not kept there all the time. They could not stand the gaff.

And we who are in the front line trenches of business are surely entitled to our little annual breathing spell.

It is up to us to get away from office or factory for two or three weeks, leave the canary with the neighbors and get out somewhere in the open where we can re-charge our physical storage battery and get it up to 100% efficiency.

Don't be afraid to "rough it" a bit. A log cabin beside a mountain lake is far healthier than a stone hotel with modern conveniences. A bed of pine needles is more hygienic than the finest hair mattress. Landing a muskellunge will teach you more about salesmanship than a whole library on psychology, and sunrise on the plains will stimulate your imagination more than anything in the world of men.

Be sure to take your vacation, and take it in the open. A red rim on your neck just above your collar will be your card of admission to better and higher efficiency.

Pa., 953 miles, we averaged 20.3 miles to the gallon and from Oklahoma City to Springfield, Mass., a distance of 2881 miles, we averaged 19 miles per gallon. We had all kinds of roads, from burro trails to boulevards. We did not stop for rain, snow or wind.

"We had plenty of mountain climbing but the little Buick fully responded to every call and I have written you a rather long story of our trip just to show you what pleasure an inexperienced driver can get out of the right kind of a car."

A Real Fresh Air Trip

FROM Ohio to Washington without once sleeping in a hotel, is the keynote of the trip by Mr. E. H. Auger and family in their Buick car last fall. Mr. and Mrs. Auger, with their daughter Edith and son Ernest, left their



Buick Pathfinder on the Columbia River, near Vantage Ferry

HOWARD-ROBINSON
ATTORNEYS



Buick

IMPORTANT BUSINESS will not wait. That is why the motor car plays so prominent a part in the busy man's daily program. It enables him to spend the maximum amount of time in his own office and still keep his appointments punctually with equally busy men. The Buick Valve-in-Head Coupe leaves nothing to be desired as a business or professional car. The unfailing dependability of its mechanical equipment is supplemented by a roomy body that guarantees perfect comfort in all weathers.

Buick

EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK



The Buick Valve-in-Head E-4—Light Delivery

YOUR Delivery Service brings your customers closer to you than any other individual feature of your business. In connection with the telephone it enables you to build up a larger and more select clientele, not confined to a restricted territory.

The Buick E-4 Light Delivery is a sturdy, capable delivery car that will do the work of three or four horse drawn vehicles at a cost about equal to the maintenance of a horse and wagon. Its Buick Valve-in-Head motor

and well-built chassis equip it to render continuous service for long periods, and its time saving devices are unequalled among other cars of its capacity. Its roomy body is accessible from the front, rear and both sides.

Buick Motor Company, Pioneer Builders of Valve-in-Head Motor Cars, Flint, Michigan

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FREE COPY

THE *Buick* BULLETIN

Published by the Sales Department
of the Buick Motor Company

JUNE 1918

FIVE CENTS A COPY



In this Number—"THE FRIENDLY CALL"—by O. Henry



"And nearer to the river's trembling edge
There grew broad flag-flowers, purple prank't with white,
And starry river-buds among the sedge,
And floating water-lilies, broad and bright,
Which lit the oak that overhung the hedge
With moonlight beams of their own watery light;
And bulrushes, and reeds of such deep green
As soothed the dazzled eye with sober sheen."

— Shelley

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Volume Six

Flint, Michigan, U. S. A.

Number Six

The Friendly Call

by
O. Henry



WHEN I used to sell hardware in the West, I often "made" a little town called Saltillo, in Colorado. I was always certain of securing a small or a large order from Simms Bell, who kept a general store there. Bell was one of those six-foot, low-voiced products, formed from a union of the West and the South. I liked him. To look at him, you would think he should be robbing stage coaches or juggling gold mines with both hands; but he would sell you a paper of tacks or a spool of thread with ten times more courtesy and patience than any saleslady in a city department store.

I had a two-fold object in my last visit to Saltillo. One was to sell a bill of goods; the other was to advise Bell of a chance that I knew of by which I was certain he could make a small fortune.

In Mountain City, a town on the Union Pacific, five times larger than Saltillo, a mercantile firm was about to go to the wall. It had a lively, growing custom, but was on the edge of dissolution and ruin. Mismanagement and the gambling habits of one of the partners, explained it. The condition of the firm was not yet public property. I had my knowledge of it from a private source. I knew that, if ready cash were offered, the stock and good will could be bought for about one-fourth their value.

On arriving in Saltillo I went to Bell's store. He nodded to me, smiled his broad, lingering smile, went on leisurely selling some candy to

a little girl, then came around the counter and shook hands.

"Well," he said (his invariable preliminary jocosity at every call I made), "I suppose you are out here making kodak pictures of the mountains. It's the wrong time of the year to buy any hardware, of course."

I told Bell about the bargain in Mountain City. If he wanted to take advantage of it, I would rather have missed a sale than have him overstocked in Saltillo.

"It sounds good," he said, with enthusiasm. "I'd rather branch out and do a bigger business, and I'm obliged to you for mentioning it. But—well, you come and stay at my house tonight and I'll think about it."

It was then after sundown and time for the larger stores in Saltillo to close. The clerks in Bell's put away their books, whirled the combination of the safe, put on their coats and hats and left for their homes. Bell padlocked the big double, wooden front doors, and we stood, for a moment, breathing the keen, fresh mountain air coming across the foothills.

A big man walked down the street and stopped in front of the high porch of the store. His long, black moustache, black eyebrows and curly black hair contrasted queerly with

his light, pink complexion, which belonged, by rights, to a blond. He was about forty, and wore a white vest, white hat, a watch chain made of five dollar gold pieces linked together, and a rather well-fitting two piece gray suit of the cut that college boys of eighteen are wont to affect. He glanced at me, distrustfully, and then at Bell with coldness and, I thought, something of enmity in his expression.

"Well," asked Bell, as if he were addressing a stranger, "did you fix up that matter?"

"Did I?" the man answered, in a resentful tone. "What do you suppose I've been here two weeks for? The business is to be settled tonight. Does that suit you, or have you got something to kick about?"

"It's all right," said Bell. "I knew you'd do it."

"Of course you did," said the magnificent stranger. "Haven't I done it before?"

"You have," admitted Bell. "And so have I. How do you find it at the hotel?"

"Rocky grub. But I ain't kicking. Say—can you give me any pointers about managing that—affair? It's my first deal in that line of business, you know."

"No, I can't," answered Bell, after some thought. "I've tried all kinds of ways. You'll have to try some of your own."

He walked away without another word. This talk was scarcely clear in its meaning to me; but as it did not concern me, I did not let it weigh upon my mind. But the singularity of the other man's appearance lingered with me for a while; and as we walked toward Bell's house I remarked to him:

"Your customer seems to be a surly kind of a fellow—not one that you'd like to be snowed in with in camp on a hunting trip."

"He is that," assented Bell, heartily. "He reminds me of a rattlesnake that's been poisoned by the bite of a tarantula."

"He doesn't look like a citizen of Saltillo," I went on.

"No," said Bell. "He lives in Sacramento. He's down here on a little business trip. His name is George Ringo, and he's been my best friend—in fact the only friend I ever had—for twenty years."

I was too surprised to make any further comment.

Bell lived in a comfortable, plain, square, two-story white house on the edge of the little town. I waited in the parlor—a room depressingly genteel—furnished with red plush, straw matting, looped-up lace curtains and a glass case large enough to contain a mummy, full of mineral specimens.

While I waited, I heard, upstairs, that unmistakable sound instantly recognized the world over—a bickering woman's voice, rising as her anger and fury grew. I could hear, between the gusts, the temperate rumble of Bell's tones, striving to oil the troubled waters.

The storm subsided soon, but not before I had heard the woman say, in a lower, concentrated tone, farther carrying than her high-pitched railings: "This is that last time. I tell you—the last time."

The household seemed to consist of only Bell and his wife and a servant or two. I was introduced to Mrs. Bell at supper.

At first sight she seemed to be a handsome woman, but I soon perceived that her charm had been spoiled. An uncontrolled petulance, I thought, an emotional egotism, an absence of poise and a habitual dissatisfaction had marred her womanhood. During the meal, she showed that false gaiety, spurious kindness and reactionary softness that mark the woman addicted to tantrums. Withal, she was a woman who might be attractive to many men.

After supper, Bell and I took our chairs outside, set them on the grass in the moonlight and smoked. I saw Bell's broad, slow smile come out upon his face and linger there.

"I reckon you think George and me are funny kind of friends," he said. "The fact is we never did take much interest in each other's company. But his idea and mine, of what a friend should be, was always synonymous and we lived up to it, strict, all these years."

"A friend, to my mind, is one you can deal with on a strict reciprocity basis like me and George have always done."



"A good many years ago, him and me was connected in a number of ways. We put our capital together and run a line of freight wagons in New Mexico, and we mined some and gambled a few. And then, we got into trouble of one or two kinds; and I reckon that got us on a better understandable basis than anything else did, unless it was the fact that we never had much personal use for each other's ways."

George is the vainest man I ever see, and the biggest brag. He could blow the biggest geyser in the Yosemite valley back into its hole with one whisper. I am a quiet man, and fond of studiousness and thought. The more we used to see each other, personally, the less we seemed to like to be together. If he had ever slapped me on the back and sniveled over me like I've seen men do to what they called their friends, I know I'd have had a rough-and-tumble with him on the spot. Same with George. He hated my ways as bad as I did his. When we were mining, we lived in separate tents so as not to intrude our obnoxiousness on each other.

"But after a long time, we begun to know each of us could depend on the other when we were in a pinch, up to his last dollar, word of honor or perjury, bullet or drop of blood we had in the world. We never even spoke of it to each other, because that would have spoiled it. But we tried it out, time after time, until we came to know. I've grabbed my hat and jumped a freight train and rode 200 miles to identify him, when he was about to be hung by mistake, in Idaho, for a train robber. Once, I laid sick of typhoid in a tent in Texas, without a dollar or a change of clothes, and sent for George in Boise City. He came on the next train."

"If you wasn't a Moses-meek little Mary's lamb, you wouldn't have been took down this way," says he. He made me a little mad.

"Two weeks afterward, when I was beginning to get around again, the doctor laughed and said he was sure that my friend's keeping me mad all the time did more than his drugs to cure me."

"So, that's the way George and me was friends. There wasn't any sentiment about it—it was just give and take, and each of us knew that the other was ready for the call at any time."

"There came a time," he went on, "when I was able to do a good turn for George Ringo. George had made a little pile of money in beeves and he was up in Denver. He wrote me to come up there, quick—that he needed me, and to bring the best outfit of clothes I had. I had 'em on when I got the letter, so I left on the next train. George was—"

Bell stopped for half a minute, listening, intently.

"I thought I heard a team coming down the road," he explained. "George was at a summer resort, on a lake near Denver and was putting on as many airs as he knew how. He had rented a little two-room cottage, and had a Chihuahua dog and a hammock and eight different kinds of walking sticks."

"Simms," he says to me, "there's a widow woman here that's pestering the soul out of me with her intentions. I can't get out of her way. It ain't that she ain't handsome and agreeable, in a sort of style, but her attentions is serious, and I ain't ready for to marry nobody and settle down. I can't go to no festivity nor sit on the hotel piazza or mix in any of the society round ups but what she cuts me out of the herd and puts her daily brand on me. I like this here place," goes on George, "and I'm making a hit here in the most censorious circles so I don't want to have to run away from it. So I sent for you."

"What do you want me to do?" I asks George.

"Why," says he. "I want you to head her off. I want you to cut me out. I want you to come to the rescue."

"Court her," George says. "Get her off my trail. Feed her. Take her out in the boats. Hang around her and stick to her. Get her mashed on you if you can."

"Had you ever thought," I asks, "of repressing your fatal fascinations in her presence; of squeezing a harsh note into the melody of your siren voice, of veiling your beauty—in other words, of giving her the bounce yourself?"

"Well, Simms," he says. "You know how I am about the ladies. I can't hurt none of their feelings. I'm, by nature, polite and esteemful of their intents and purposes. This Mrs. De Clinton don't appear to be the suitable sort for me. Besides, I ain't a marrying man by all means."

"All right," says I, "I'll do the best I can in the case."

"So I bought a new outfit of clothes and a book on etiquette and made a dead set for Mrs. De Clinton. She was a fine-looking woman, cheerful and gay. It was easier than I had any idea. At first, I almost had to hobble her to keep her from loping around George's heels; but finally I got her so she seemed glad to go riding with me, and sailing on the lake; and she seemed hurt on the mornings when I forgot to send her a bunch of flowers. Still, I didn't like the way she looked at George, sometimes, out of the corner of her eye. George was having a fine time now, going on with the whole bunch just as he pleased. Yes," continued Bell, "she certainly was a fine looking woman at that time. She's changed some since, as you might have noticed at the supper table."

"What!" I exclaimed.

"I married Mrs. De Clinton," went on Bell. "one evening while we were up at the lake. When I told George about it, he opened his mouth and I thought he was going to break our traditions and say something grateful, but he swallowed it back."

"That was three years ago," said Bell. "We came here to live. For a year we got along medium fine. And then everything changed. For two years I've been having something that rhymes, first-class, with my name. You heard the row, upstairs, this evening? That was a merry welcome compared to the usual average. She's tired of me and of this little town life and she rages all day, like a panther in a cage. I stood it until two weeks ago and then I had to send out The Call. I located George in Sacramento. He started the day he got my wire."

Mrs. Bell came out of the house swiftly toward us. Some strong excitement or anxiety seemed to possess her, but she smiled a faint hostess smile, and tried to keep her voice calm.

"The dew is falling," she said, "and it's growing rather late. Wouldn't you gentlemen rather come into the house?"

Bell took some cigars from his pocket and answered: "It's most too fine a night to turn in yet. I think Mr. Ames and I will walk out along the road a mile or so and have another



smoke. I want to talk with him about some goods that I want to buy."

"Up the road or down the road?"

"Down," said Bell.

I thought she breathed a sigh of relief.

When we had gone a hundred yards and the house became concealed by trees, Bell guided me into the thick grove that lined the road and back through them toward the house again. We stopped within twenty yards of the house, concealed by the dark shadows. I wondered at this maneuver. And then I heard in the distance coming down the road beyond the house, the regular hoofbeats of a team of horses. Bell held his watch in a ray of moonlight.

"On time, within a minute," he said. "That's George's way."

[Continued on page 12.]

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

IN the event of your automobile being stolen, would you be in position to positively identify it to the satisfaction of the authorities when located, even if the thieves had made unusual efforts to disguise it?

This is a problem as old as the industry itself and is one that will never be solved except by the owners of automobiles. The manufacturers have wrestled with it for years, and the steps taken by them are undoubtedly more complete than will be found in any other class of manufactured products.

Every frame, every body, every motor and transmission and rear axle, every tire and steering gear, or any other unit that can be named, bears the factory serial number, cast, forged or stamped into it. And for a time this precaution was an effective means of identifying a stolen car.

But automobile thieves have found the stealing of automobiles so profitable on account of the loose laws in some sections of the country, that they have devoted an amount of work and cunning to their low practices that is worthy of a much better cause. It is a matter of common knowledge that they will steal two or more of the same make of cars, switch the various units about from one to another, obliterate some of the serial numbers and change others, so that eventually these numbers in many cases are almost useless from the standpoint of the rightful owner.

This is a condition that cannot be controlled at the factory. Similarly, it cannot be controlled by the owner.

BUT there is a way for the owner to get around it. He can put some private marks in obscure places on his car where they will not be likely to be detected, or if detected will not be regarded seriously by the thief. But as long as the owner continues to leave all the precautions to somebody else, he is playing right into the hands of his enemies.

It is unfortunate that the automobile is not better protected by law, but probably nothing but time will change that. There was a time in the old pioneer days when a thief could steal a horse anywhere out west without any degree of danger. After a time it was sure death to steal a horse, as the thief was invariably hanged when caught, with the result that the game was not worth the candle and horse owners were disturbed only at long intervals.

Perhaps the automobile will some day be as well guarded, but in the meantime the owner has the alternative of letting the insurance company worry about it or of looking after his own interests as best he can.

IT seems rather odd that the average motor car owner is so sadly lacking in means of identifying his car. If he bought a horse he would soon know every peculiar marking on that horse. He would know that it had two white feet, that there was a scar on one of its legs from contact with a barbed wire fence, that it had an odd shaped marking on its forehead, and so on. He would know similar markings on his pet dog, if he had one. He could tell you something about his pen knife, or his watch, or any other of his personal effects. But his automobile is a different story.

He knows that it is a five-passenger car, made in such and such a year, along with perhaps a hundred thousand other cars of the same model. But after describing its top, windshield, dash equipment, extra tires and so on, he hasn't given the police a single tangible clew that would distinguish his car from others of the same model. The chances are that he has even lost the car number and will have to apply to the dealer for it.

The first thing to do, if possible, is to tell the police something that will identify the car as it passes on the street in case there is something about its outward appearance to distinguish it. The second thing is to tell them the location of some private marks that will positively identify the car in addition to the assembly numbers in case any of them have been changed.

Some owners seem to think that the manufacturer ought to devise some means of making these private marks, and this would be quite feasible if only a few cars were built by one company in a single year. But in the case of large quantity production, such as the Buick Motor Company's, it is entirely out of the question.

A PRIVATE mark, to be a private mark, must be unique. It must be different from the mark on any other Buick car of the same model, otherwise it is not a positive means of identification. With a production of upwards of one hundred thousand cars a year, it would be necessary for the manufacturers to devise one hundred thousand separate and distinct marks, keep a record of them all, advise each individual owner what the marks were and where to find them. This is so far out of the question that it will not be necessary to discuss it.

On the other hand, if the Buick Motor Company were to adopt a system of this kind the thieves would not be long in becoming entirely familiar with it, when it would have immediately served its usefulness exactly as the numerous factory serial numbers have done to date.

As an illustration, a case was tried

in court some time ago when a Buick employe was called in to identify a car, which he succeeded in doing. But the thief was right there at the time, and possibly some of his accomplices were there also, so that the cat was out of the bag from that time on, as far as the thieves were concerned. Which will evidence to you the folly of marking more than one automobile in like manner provided you want to retard the thief's game.

MOTOR organizations everywhere are taking a very active interest in the question of automobile stealing and are doing some effective work along these lines by cooperating with the local authorities. The situation looks much better now than it has for some time, but it is not improved to the point where the motorist can afford to take undue chances of his car being stolen.

Neither should he leave all the efforts and precautions to the other fellow. Thieves should be vigorously prosecuted by automobile owners whenever caught, whether their cars happen to be insured or not, because this seems to be the only method of getting at the root of the evil and stamping it out. Much of the trouble of prosecuting thieves can be avoided by the owner who belongs to a club or association retaining an attorney for the purpose, and these clubs surely deserve all the cooperation that local owners can give them.

Every automobile should be equipped with a good lock of some description, but it should also be remembered that even a lock can be disposed of if the thief has time enough.

It all simmers down to the fact that the owner should be the most interested person in protecting his own property, and he is really the only one who can devise an absolutely distinctive means of identifying his car that nobody else will be familiar with.

It will not take much time to put such marks on his car in obscure places and in such a manner that they cannot be readily removed, and the time thus spent will be a wonderfully good investment if the occasion ever arises when they will be needed. A motor car is a valuable piece of property—more valuable, perhaps, than any other movable property in the possession of the average owner—and for this reason the owner should place himself in position to positively identify it if it is ever stolen. It should not be left for somebody else to do.

If each individual automobile owner were to put the above suggestions into practice, it would be greatly appreciated by the authorities and make it much easier for them to bring the culprits to justice.

How Buick Valve-in-Head

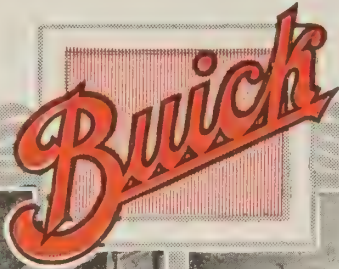
THE motor car owner often wonders, when he thinks of the thousands of miles of country road and city pavement his car has traversed with apparent ease and with very little attention on the part of the driver, just how the designers of automobiles operate and what the producing of a new model means.

The golden rule of the good designer is to make haste slowly. It is folly to attempt to design a car and rush it into production without exhaustive preliminary tests, because no matter how greatly the designer may be endowed in the way of genius, there are always points of design that look sublime in theory and ridiculous in practice. The public has a disconcerting way of finding this out shortly after the announcement ads have appeared, so it behooves the designer to cultivate patience and a wholesome respect for proven principles.

drawings from which the working blue prints are made. These drawings are then returned to the engineers and checked against the data to catch possible errors.

When the general layout of the car is completed the various manufacturing heads are invited in to criticize the suggested constructions from a manufacturing standpoint. Many of these men are graduate engineers and all of them are experts in their particular lines. The foundry head inspects the drawings for castings and either approves them or suggests other constructions that will secure the same result and be simpler and easier to handle. The

NEXT the material specifications are sent to the testing laboratory, where chemical and physical tests are made. The purpose of these tests is to determine whether the material in a given part is best adapted to the particular work it will have to do. Curious machines line the walls—machines that take crankshafts and twist them into unrecognizable pieces of scrap, or stretch a bar of steel until it snaps and then record the number of pounds of energy it took to break it. The man in charge says they are for testing torsional, compressional and tensile strength of materials. Other metals are chemically analyzed to determine the percentage of certain alloys and carbon they contain and the chemists work with an equipment of delicate scales and instruments that would have been a revelation to the alchemists of old. With the pungent odors of acids and vapors still in our nostrils, we follow



The Buick Engineering offices are so arranged that the Chief Engineer is constantly in touch with his various assistants.



As soon as the design for any Buick part has been decided upon, skilled draftsmen prepare the drawings for the factory blue prints.

The first step in designing is to determine the sizes and types of cars the public demands. This is done in conference with the selling division, which is naturally in closest touch with the market. This important point decided, the engineers retire behind the Yale locks of their retreat and become absorbed in an orderly confusion of mathematics, physics, chemistry, blue prints, patterns, parts and testing machines of mysterious form and function. Each designer is a specialist and develops certain parts of the car, such as the motor, transmission, clutch, spring suspension, etc.

THE task of designing the motor is greatly simplified, because the Valve-in-Head principle has stood the test of time and use, while close cooperation between the Buick designers and manufacturing heads has resulted in a wonderful development of its possibilities, both in performance and manufacturing economy. The designer's task is to construct a motor that will handle the maximum load it will have to carry economically and with ease, incorporating such improvements as the previous year's experience and research have developed.

This same general plan is followed with reference to all other mechanical parts of the car and as fast as the problems have been worked out the results are turned over to skilled draftsmen, who make the accurate



The blue prints go from the engineers to the pattern makers, whose duty it is to make the wooden patterns from which the metal patterns for the production departments are made. This is a most important phase of the work, as the wooden patterns must be absolutely perfect and check exactly with the measurements given on the blue prints.

forge expert looks at the forging designs to see if there is anything he can suggest that will result in improvements in the dies. The head pattern maker is on the *qui vive* for economies in the patterns, and so on down the long line of production heads. The net result is a vast saving in time and money in the factory, which of course reflects itself in the ultimate selling price of the car. It is impossible to lay too much stress on this characteristic of the Buick organization, which takes advantage of the experience of the officials in every department.

the drawings into the "model room" where the work begins to take more tangible form. Wooden patterns are made for the parts requiring patterns. Forgings and castings are machined, gear blanks are cut, frames are riveted together and gradually assemblies are completed by the busy crew.

The model room is equipped with a most complete assortment of machinery. It should be borne in mind that all work done in the development of a new model is conducted in absolute secrecy, except for the men actually engaged in it. So the men in the model room, under the supervision of the designers, build the experimental cars and it is quite necessary that this room be a small factory in itself. The workmen, too, are selected with the greatest care and rank among the most expert men employed in the Buick factory.

WHEN the experimental motor is ready it goes in to do battle with the dynamometer, an electrical device that records the number of revolutions per minute the motor is making and the horsepower it develops at any given speed. In effect it is as if the motor were pulling a car up a heavy grade that grows stiffer and ever stiffer as the throttle is opened wider, but it affords the engineers infinitely greater opportunities for tabulating the results. They gravely take its temperature, gauge its appetite for gasoline, test the nervous energy of

Motor Cars Are Designed



its ignition, inspect the lubrication of its many joints and try its muscle in a hundred ways. When it has a clean bill of health as to power, cooling, ignition, lubrication, carburetion—everything—its power curve is recorded and it is placed into the test car that has meantime been assembled in the model room.

Test cars are put out to work under trained crews of testers. Every condition of road and service is sought by these men to find out how the cars perform, and the most accurate records are kept of their power, cooling, acceleration, carburetion, etc. The engineers constantly keep in mind the fact that Buick cars are used in almost every part of the world and under varying conditions of road and climate, so the tests which are applied to these particular cars are much more severe than the cars ever experience in actual service. Periodically the cars are torn down to see how this or that construction is standing up and how all parts are working in relation to the rest of the car. And always previous Buick models are used for comparison and always must an improvement be shown.

In the meantime the bodies and spring suspension are being developed. The body designer is as much of an artist as he is an engineer and it is he who creates the graceful lines and curves on the various models. His constant study is how to get more room, more comfort, more convenience and more beauty in Buick models.

Several front and rear springs are sent to the testing laboratory and tested for flexibility and weight of load. But this is not all. They are disassembled and the leaves measured, in order to compute the stresses that come on the leaves in actual service. Then they are put on the test chassis under the new body and tested over all kinds of roads.

WHEN the model has finally been approved the necessary tools, dies, jigs, fixtures and patterns are made by the factory departments maintained for this purpose. From the wooden patterns, metal patterns are made, so they will not be damaged or broken in use. Several hundred thousand dollars' worth of tools, fixtures and patterns are required before factory production can actually commence.

Nor do the designers forget the new model as soon as quantity production has commenced. On the contrary, they are as much interested in it as ever and continue to watch it all through the season. For the designer is always looking to the future, always studying how this feature can be improved or that one simplified.

To assist them in this work, there is a research department that keeps constantly in touch with all manufacturing operations and reports the results of its findings to the engineers.



The Buick experimental, or model room, is a small factory in itself, for during the development of a Buick model it is necessary to build several cars complete in this room, under the supervision of the Buick engineers. The workmen employed are not only expert machinists but are expert automobile mechanics as well, capable of doing the thousand and one things that are necessary without having to call on the production departments. This keeps the work well centered where the engineers are always closely in touch with it.



This is an extremely busy department, because the engineers must not only keep in touch with the way the various parts are manufactured and the problems encountered in the factory, but they must be watching the subject of materials with unceasing vigilance.

THUS the properties of carbon steels, alloy steels of every description, bearing metals and countless materials that go to make up the modern Buick car have as great a bearing on the

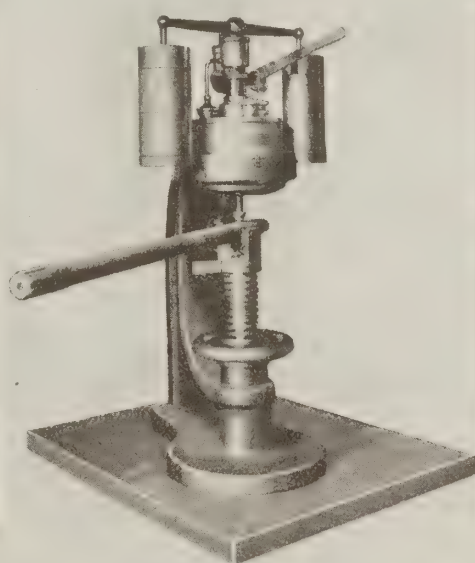
subject of efficiency as the size and shape of the parts themselves. The weight of some parts can be reduced remarkably sometimes by the use of alloy steels instead of carbon steels and at the same time give increased strength and wearing qualities. Aluminum castings can be given surprising strength by the addition of certain other metals in the proper proportion.

So great is the volume of research and experimental work in connection with the designing of Buick cars that each branch of the work has been placed in a separate department of the engineering division. There is the chemical laboratory, the physical laboratory, the metallurgical laboratory and the electrical laboratory. These departments have already been dealt with in a separate article, and while their province extends beyond the engineering department into checking the actual manufacture of the cars, the designers depend upon them to a large degree.

The work of the "field men" is also of great importance. These men operate along the most practical lines between the engineers and the factory departments. Their duty is to keep in touch with the various Buick parts as they are being built, not only to see that they are being made in accordance with the specifications but to see if there is any way in which they can be improved. Their reports are made directly to the chief engineer.

So the task of the Buick designer progresses rather by the development of what has already been built than by striking off at a tangent and discarding the experience of yesterday. His course is a perfectly logical one throughout, guided by a marvelous array of scientific equipment with which to critically measure the new against the old and with a corps of expert assistants.

These are some of the more interesting points in connection with designing a Buick car. It would take a volume to cover the car in its entirety. But enough has been said to show that guesswork finds no place in the achievement. Every single part of the car, no matter how small, is placed in actual service and tested for many months before it passes the board of censorship. It is then ready to manufacture in quantities and fearlessly face the judgment of the supreme court of Buick owners.



One of the important features of design is to know exactly the strength, hardness or other properties of the steel employed in a given part. To test the hardness of a piece of steel in this Brinell hardness testing machine, a spot is ground smooth and placed under the hardened steel ball of the machine, which is forced into the surface under a pressure of 6600 pounds. The pressure remains for ten seconds, when the resulting depression is measured by means of a graduated microscope.



Wherever a hollow space or hole is to be made in a casting, it is necessary to make "cores" from special sand mixed with core compound. The heat of the molten metal burns out the compound and the sand is shaken out when the casting has hardened.



Buick



EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK



BUSINESS of every description needs the briskness of the automobile. The nature of the service decides the type of car that will be found most useful.

For those who require cars of limited passenger capacity but unlimited serviceability, these two Buick Valve-in-Head models will be eminently helpful.

Both the Coupe and the Three-Passenger Car are built on the same chassis as the Five-Passenger model, the bodies being carefully designed and built to give maximum comfort.

The Coupe seats two besides the driver, with an extra swinging seat for a fourth passenger. The interior is absolutely draft and weatherproof and is upholstered in automobile cloth.

The Three-Passenger Car accommodates three on the wide seat, and the arrangement of the floor space and doors gives ample room at all times.



愛用之門
此項引擎係由名師設計，構造精確，動力強大，且其構造簡單，易於修理，故為汽車界所公認。凡欲購此項引擎者，請向各埠代理商洽購，定必滿意。

Mary Pickford is always associated with movies of some sort, and is here shown in Red Cross work with the Buick Valve-in-Head movie, otherwise known as the Model E-4 Light Delivery. The Red Cross War Council has established a Salvage Department in Los Angeles, the purpose of which is to convert rags, bottles and other so-called "junk" into money to further the noble work of the organization, and it is this work that the picture portrays. The other lady in the picture is Mrs. Clara Mosher, who has the distinction of being the first volunteer woman Red Cross driver.



The Hiatt Motors Company, Buick dealers at Kansas City, have built up a wonderful business with service as the foundation. Their fine showroom and building compare favorably with the best the country affords, and they have solved the problem of rendering service to the busy business man in a manner that is entirely in keeping with the high standard set by Buick cars themselves. Their complete service department is augmented by two service cars to take care of emergency calls.

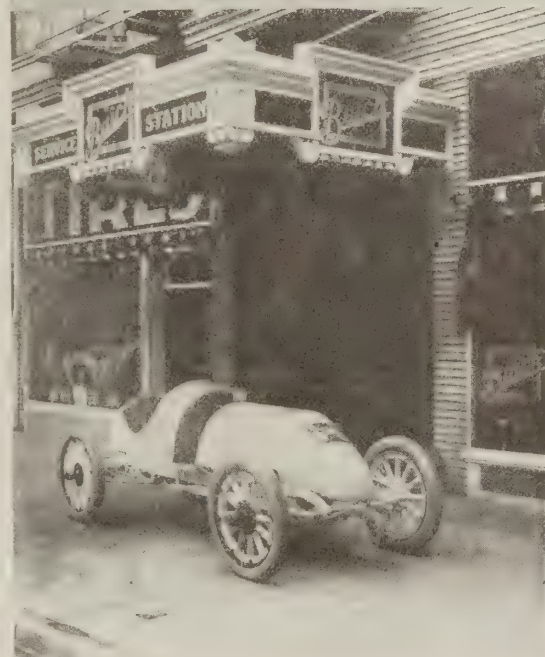
Try this on your piano. It is nothing more nor less than the Buick Valve-in-Head story done into faultless Chinese for the benefit of Celestial Buick owners and prospective owners. Please note that "Valve-in-Head" is readily translated, while "L-head" and "T-head" must ever remain unknown quantities as far as the oldest civilization in the world is concerned. You simply can't say them in Chinese, let alone tell why anybody should buy them.



For five years the Fifth Avenue Garage, Buick dealers at La Grange, Ill., have handled Buick cars in that territory and have built up an exceptionally fine business. R. W. Plummer is the manager, and in speaking of the Buick line refers to it as his "one best bet" on account of the low service cost of the cars and the satisfaction they give to all classes of owners. The new building is 110 feet by 140 feet, with a full stock of Buick parts and a spick and span showroom accommodating five cars.



When you get entirely beyond reach of a Buick salesroom, you may search in vain for running water, electric lights and other modern necessities. For example, Welterveden, in the East Indies, is a long ways from home for most Bulletin readers, but the showroom of P. J. Janssen & Co., Buick dealers there, is stocked with a complete line of the latest Buick models, and everything is as attractive and clean as can be. Witness the photograph.



Major General Swinton rather detests publicity and in consequence his name and picture do not appear so much in the public press as those of his brain-children. For General Swinton is the father of the awe-inspiring British tanks which have stricken terror into the hearts of millions of Huns, all the way from sun-baked Mesopotamia to the shell craters of the Western Front. The picture was taken during a recent visit of the General's to Seattle and shows him occupying the rear seat of a big Buick Seven-Passenger Car.



Several years have passed since the Buick Bug was making racing history. But in those days there were few automobile races of any importance that did not carry the Buick Bug as an entry, and few worth while records that the Bug did not establish. Many of those records are still standing as testimonials to Buick Valve-in-Head power and stamina, and the old Bug looks his same old sprightly self in spite of his long and strenuous career.

A. B. Johnson, Buick dealer at Springfield, Ill., insists that every Buick owner report to him with his car for inspection twice a month, and is just as glad to render service to Buick tourists from distant points as to his local patrons. Very little need be added to this statement to convey a correct impression of the character of his business or the enthusiasm of Buick owners in the Springfield territory. A completely equipped organization backed by a liberal policy of this kind cannot help but succeed, as Mr. Johnston has done in a large way.



The Gresham-Buick Co. represents Buick cars in Gresham, Oregon, under the direction of Chas. Copel, who has long been a member of the Buick ranks. The building is a newly completed one of white pressed brick, well laid out and finely equipped for both sales and service accommodations.

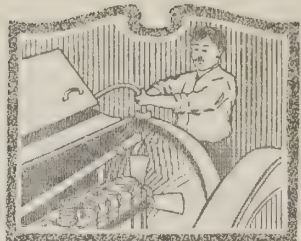


In South Africa, gasoline is petrol and the transmission is the "gear box" but Buick Valve-in-Head is the same the world over. Morris & Morris sell Buick cars in the bustling city of Queens-town and have made Buick Valve-in-Head the watchword of the motoring fraternity there. The road rules make right-hand drive cars imperative, but otherwise the Buicks are not altered to meet the vastly changed driving conditions of that tropic clime.



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars

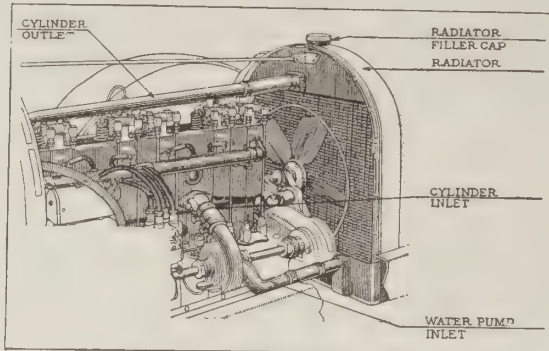


The Cooling System

AFTER each season's use, and particularly at the approach of warm weather, the cooling system of a motor car should be cleaned out, for the same reason that it is advisable to clean out the interior of a steam boiler. There is a certain amount of sediment and mineral matter in all water which has a tendency to settle in the radiator and water jackets, and the more completely this is removed the more perfectly the cooling system will work under all conditions.

The best method to pursue in cleaning the system is to fill it with a weak solution of soda and water, running the motor for a few minutes to allow the water pump to circulate the solution. Then drain the system by opening the water pump petcock and the drain in the bottom of the radiator. Then, leaving these

drains still open, turn a stream from an ordinary garden hose into the radiator and allow the motor to run until nothing but pure water appears at the draining points. This will thoroughly clean out any deposits resulting from the water or anti-freeze mixtures



which, if allowed to remain, would probably rot the hose connections as well as interfere with the proper radiation of heat through the water jackets.

After having cleaned the system thoroughly it is well to remember not to fill the radiator to capacity, because if this is done the water is liable to syphon out through the overflow pipe extending up into the neck of the filler, or it may leak out under the radiator cap on to the outside of the bonnet, causing streaks and untidy appearance. This action is caused by the expansion of the water when heated. The radiator should not be filled more than level with the upper margin of the nameplate on the radiator, which leaves sufficient room for the expansion of the water.

These simple precautions will aid materially in the action and efficiency of the motor.

SOME BUICK BOUQUETS FROM PLEASED OWNERS

Two Buicks; No Trouble

I AM a reader of the Buick Bulletin," writes Mr. J. A. Dahlem, a Chicago merchant, "also am a Buick booster. Last June I bought a Model E-Six-49 and have driven it almost 5000 miles, mostly over country roads, and up to the present time have not had a bit of trouble. Have not had occasion to remove a spark plug or change a tire. Surely am pleased with my car as I also was with my previous car, a Model C-25, which I drove almost 20,000 miles without once being in a repair shop. The only bill for repairs was for a broken brake rod. The Buick surely is 'some car'."

"Efficiency Its True Name"

RALPH A. WILCON, M. D., a prominent physician of Phoenix, New York, submits the following brief but very significant table of the Buick cars owned and driven by him:

Model 10, 1910, driven 17,000 miles.
Model 28, 1912, driven 40,000 miles.
Little Six, 1916, driven 10,000 miles.
Little Six, 1917, driven 10,000 miles.
Little Six, 1918, delivered May 1st.

"These cars," writes the doctor, "have been driven over all kinds of roads, in all kinds of weather and at a good rate of speed. EFFICIENCY is the true name of the Buick."

Likes Buick Service

I HAVE always been very much pleased," writes Mr. Fred E. Yahr, wholesale druggist of Milwaukee, "with the service I have received from the East Side Agency, as all the boys are very accommodating. What I want is 'Good Service' and I think the Buick Company is in a better condition to give it than any other motor company on the East Side.

"I have always had very fair treatment and this is the fourth Buick I have owned. I do not think I will be without one for some years to come."

Buick Gives Big Mileage

MR. NELSON A. MANTZ, prominent architect of Akron, Ohio, writes under date of February 15th: "I have one of your Model D-Six-45 Touring Cars, which has given me a great deal of pleasure and satisfaction during the past two years. It is always ready to go and never gives me any trouble on the road. I frequently get as much as 22 to 26 miles to the gallon of gasoline.

"The original rear tires on the car gave me 5600 miles of service and the original front tires are still on the car at 7500 miles and look good for several thousand more. This is a record of from a third to one-half more mileage than I ever secured before on several other makes of cars in twelve years' use."

Stands Up in All Respects

ONE year ago today," writes Mr. Harry Sharpe, of Woodhull, New York, "I purchased a Model D-Four-35 Touring Car of the Decker Auto Co., of Elmira. I have run this car 7200 miles. The motor has never had a wrench on it for a repair of any kind. The motor has never refused to go, the battery has never refused to work. I have run the car through sand up to the hubs and through snowdrifts until the body dragged in the snow. Last October I made a trip of 1000 miles in it without trouble of any kind, through six different states and the District of Columbia.

"I am more than pleased with my car. I wish you a prosperous year and thank you for the Buick Bulletin that has been sent to me."

Commends Buick Dealer

DR. E. VAN REED, of Lafayette, Ind., wrote under date of May 6th: "I have been reading your 'Buick Bulletin' and was much interested in your article under 'Current Comment' (about Buick dealers). I want to say a word of commendation for your agency at this place, under the management of Mr. Charles Shambaugh. I trust he will always sell the Buick, because I would not want to drive a car of any other make. One year ago last March I purchased a Buick roadster from him, and being a physician I have had to have quick service when my car was in need of attention. I have had the highest quality of service from everybody connected with the establishment."

Service at Small Expense

I HAVE been receiving the Buick Bulletin every month," writes Mr. J. R. Brunner, of North Wales, Pa., and believe I would miss it if it did not come to hand regularly. I have been receiving it ever since I bought my car in July, 1915, and the longer I run this car the more of a Buick booster I feel myself to be, as the car has certainly given me service without any great expense for repairs.

"I cannot speak too highly of the starting, lighting and ignition systems which the Buick Company have been installing in their cars. Since the self-starters and electric lights have been in use, I have never had any trouble that has inconvenienced me. I have the same original storage battery in my car that I had at the time I bought it, with the expense of one new cell. This, you know, is quite a record for a storage battery. The Buick was not the first car I owned, as I had a car three or four years before I bought the Buick."

THE FRIENDLY CALL

(Continued from page four)

The team slowed up as it drew near the house and stopped in a patch of black shadows. We saw the figure of a woman carrying a heavy valise move swiftly from the other side of the house, and hurry to the waiting vehicle. Then it rolled away briskly in the direction from which it had come.

I looked at Bell inquiringly, I suppose.

"She's running away with George," said Bell, simply. "He's kept me posted about the progress of the scheme all along. She'll get a divorce in six months and then George will marry her. He never helps anybody half-way. It's all arranged between them."

I began to wonder what friendship was, after all.

When we went to the house Bell began to talk easily on other subjects; and I took his cue. By and by the big chance he had to buy out the business in Mountain City came back to my mind and I began to urge it upon him. Now that he was free, it would be easier for him to make the move; and he was sure of a splendid bargain.

Bell was silent for some minutes, but when I looked at him I fancied that he was thinking of something else—that he was not considering the project.

"Why, no, Mr. Ames," he said, after a little. "I can't make that deal. I'm awful thankful to you, though, for telling me about it. But I've got to stay here. I can't go to Mountain City."

"Why?" I asked.

"Missis Bell," he replied, "won't live in Mountain City. She hates the place and wouldn't go there. I've got to keep right on here in Saltillo."

"Mrs. Bell!" I exclaimed, too puzzled to conjecture what he meant.

"I ought to explain," said Bell. "I know George and I know Mrs. Bell. He's impatient in his ways. He can't stand things that fret him, long, like I can. Six months I give them—six months of married life, and there'll be another disunion. Mrs. Bell will come back to me. There's no other place for her to go. I've got to stay here and wait. At the end of six months I'll have to grab a satchel and catch the first train. For George will be sending out The Call."

Solving the Shipping Problem

TRANSPORTATION is a subject that is claiming the serious attention of America's thinking men today, and as we get deeper and deeper into the great world war it becomes more and more vital to everybody—both individuals and manufacturers.

In America we rely upon the railroads to a greater extent than any other people in the world for the transportation of our domestic requirements, and in normal times draw comparatively little upon our other transportation resources.

But the fact remains that we have these resources, and they can be turned to economic as well as patriotic advantage in such a time as this, by using them wherever possible instead of the railroads.

The motor car industry as a whole has taken prompt steps in this direction, and the possibilities of these auxiliary modes of transportation have opened up in a most gratifying manner. A great deal of thought and effort have been expended by the various automobile companies on the development of these possibilities and the progress made in the last year has been very marked. The time is ripe for other industries besides the motor car builders to turn to these transportation fields.

In the first place, the automobile has been largely responsible for the good roads movement in every section of the country, and today there is a network of excellent highways connecting all parts of the north, south, east and west. These highways, aside from the additional comfort they give to travelers, have an immense commercial value. They are highly capable of transporting many millions of tons of freight annually, in a wholly satisfactory and expeditious manner.

The motor car companies have been using them, both summer and winter, in getting cars into the hands of owners at more or less distant points, thus relieving the railroads of a very considerable tonnage.

This practice gave birth to the inter-city trucking service which is to be found in most parts of the country and is used for moving government supplies as well as those of private enterprises. But this field is still in its infancy and should be given attention by shippers in general.

The great waterways of the country, natural as well as artificial, form another method of



Quite a sensation was created in Cincinnati recently when the Ohio River was put to work on a large scale by the Buick Motor Company. Hundreds of cars, destined for Memphis, Tenn., were driven cross country from the factory at Flint to Cincinnati, where they were put on three large barges towed by one of the flat-bottomed stern wheelers of the Ohio River type. The shipment was then concluded via the Ohio and Mississippi rivers, without adding an ounce of burden to the railroads. Buick shipments are now being regularly made in this manner.

effective and inexpensive transportation that may be fitted in admirably with both rail and inter-city transportation, for the benefit of the shipper and of the freight situation.

Wherever possible, it should be the aim of shippers to send their goods at least part way by water. It is being done regularly by a certain percentage of shippers, but the attention of traffic managers has not been focused upon it as fully as might be. There is a tendency to stick to the beaten path, rather than to develop the auxiliary lines. But looking to the future, these auxiliary shipping methods are bound to mature during the next year or so to such an extent that they will have a distinctly beneficial effect on the question of transportation when the present exigency is a thing of the past.

The use of railroad equipment is another phase that is undergoing a great change. Formerly the railroads reserved certain cars for certain classes of goods, and empty cars were hauled hundreds and even thousands of miles to return them to various points. Nowadays, rolling stock is rolling stock, and any type of car is used for almost any kind of freight. Flat cars are loaded with goods that were formerly sent in box cars only, being protected from the weather when necessary by

ingenious covers. Through the cooperation of shippers, return empties have largely become out of style. This necessitates close contact between the traffic managers and the railroad companies, but it is an extremely important work and keeps the rolling stock constantly busy, as it should be.

The railroads are doing their part in excellent style. It would be a revelation to the shipper of twenty years ago to visit some of the great terminals today and see the manner in which freight of all kinds is handled. Real system has been injected into every department and new methods of loading and unloading worked out. Cars that were formerly loaded and unloaded by hand are now filled and emptied in a small fraction of the time by great traveling cranes.

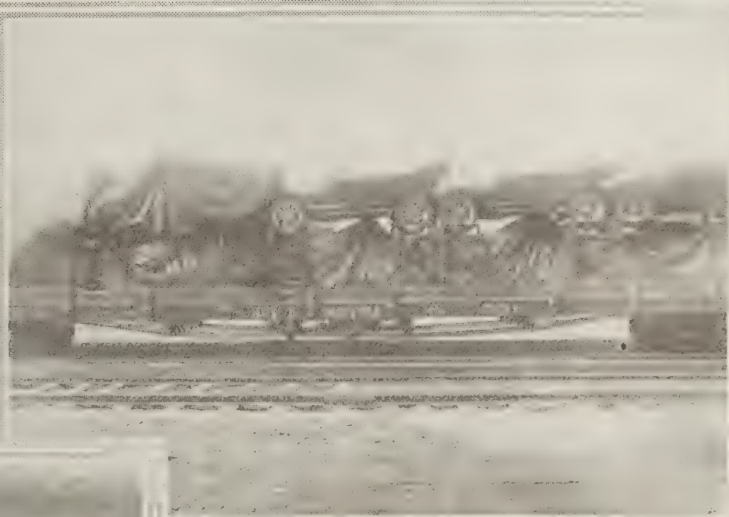
Some of the shippers, also, have worked out equipment that enables them to put much larger quantities of their products into freight cars than formerly, by means of "double decking." A notable instance of this is the knock-down steel decking used by the Buick Motor Company which permits ten Buick cars to be loaded on a car that would formerly only accommodate five. When the cars are unloaded, the decking is sent back to the factory to be used again.



Even King Winter does not stop the stream of drive-aways from the Buick factory. Here is a batch of cars that were driven from Flint to Ticonderoga, New York, during the winter, by the Buick dealers at that point. The distance covered was 850 miles. Buick road crews kept the highways open for hundreds of miles in every direction from Flint and co-operated with other manufacturers who were also driving cars away.



Buicks bound downstream on the Ohio River



This photograph of ten Buick cars loaded on a single flat car was furnished by the Western Inspection Bureau, at Chicago. The Bureau has taken a keen interest in the Buick efforts to conserve freight space and has commended them highly, particularly on their method of double-decking the cars for shipment by means of the steel decking shown in this picture. This decking is knock-down and is used over and over.

Out in the Open With Buick Owners

Looping the States

This round trip of Mr. Otto Hillig's was made in the fall and winter, when the road conditions were unfavorable.

IN company with Mr. John L. Porter, I started from Liberty, New York, on October ninth, at noon, equipped with a new set of tires. The entire trip was made in my Buick Six Roadster, 1915 model, and to look at the car now you would never know that it made the journey. We reached Chicago three days later, making fast time all the way save for a stretch of some forty miles in Michigan. From there we went on to Omaha, Cheyenne, Salt Lake City and San Francisco, reaching there at noon on October 30, exactly three weeks after leaving home. We encountered partly muddy roads between Chicago and Omaha. Through Nebraska the roads were dry and fairly good.

"At Lodgepole, Neb., we struck snow, in stretches very deep and almost impassable. We had to shovel out many banks. From Medicine Bow to Evanston, Wyoming, was mud and slush, having to travel with chains for five days over the worst roads I have ever driven a car. We were mired many times, getting into mud up to the axles, but the faithful Buick never failed to pull through.

"From Evanston, via Ogden, to Salt Lake City the roads were fairly good and in places very fast. The deserts through Nevada were good

To Crater Lake

Here's another interesting trip by Mr. Harry Tarstegge, who has recently moved to California from the east.

GOING from southern California, as I did, the best roads may be found by turning off the Pacific Highway at Ashland, Oregon, and entering the Crater Lake National Park from the west side. However, I turned off in California north of Mount Shasta and accordingly encountered roads which were all but impassable. But the scenery far surpasses the Ashland route.

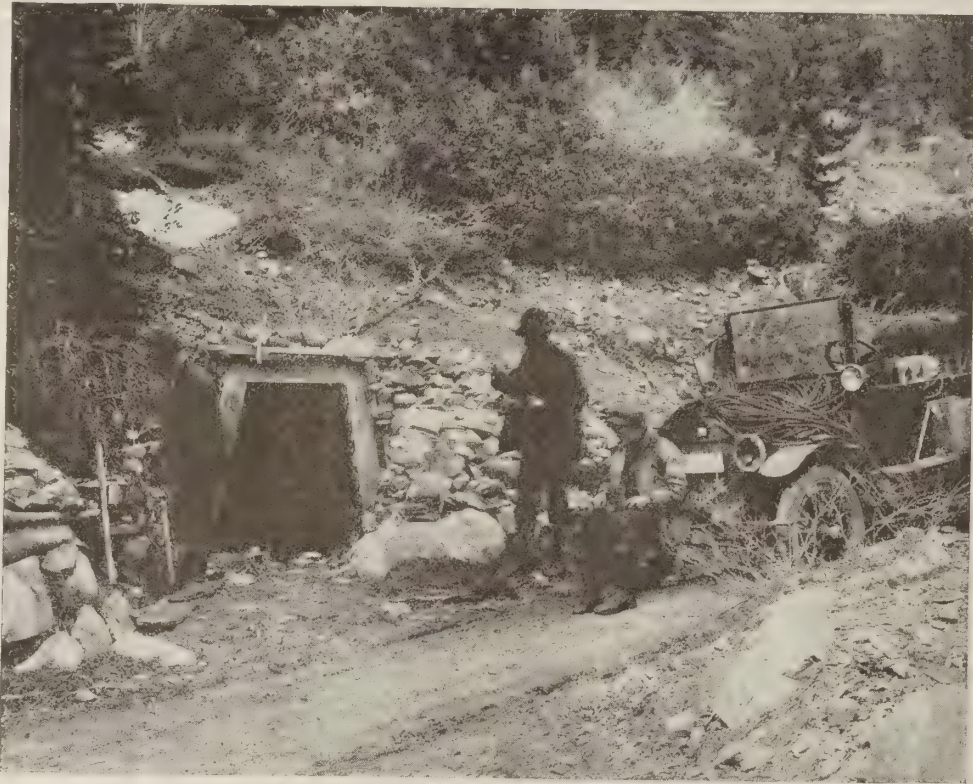
Among the Sequoias

Mr. Harry Tarstegge, of Lindsay, California, has made some very interesting tours in his Buick Model D-Six-45, and the account of his trip among the world's oldest and largest trees may perhaps be helpful to some Bulletin readers in solving the vacation problem.

THE Sequoias are found in the greatest numbers and reach their largest size in the Sequoia National Park, located in Tulare County, California. They are best reached from the county seat, Visalia, via Lindsay, the hub of the citrus industry of California. The park is sixty miles from the last named place and must be reached via stage or private conveyance. The trip is over narrow mountain roads which are very steep in places, but fairly smooth.

"I wish to note here the ease with which my Buick D-Six-45 can be controlled, especially in shifting gears. In climbing steep pitches, it is often necessary to shift from high gear into intermediate or low on a grade and under severe pulling. I had no difficulty at all in doing this, and there was never any friction between the gears in the changes.

"One is relieved of \$2.50 for a permit to enter this park. The trees here are the largest in the world. Trees twenty-five feet in diameter are quite common, and there are many as large as thirty or thirty-five feet through.



Buick Tourists Lunching at an Old Western Mine



Mr. Hillig among the Indians in San Diego, N. M.

and dry and we had no difficulty in getting across. Crossing the Sierras at Carson City, via Lake Tahoe, we struck beautiful roads all the way into San Francisco. We spent a week sightseeing in California and struck for home at Los Angeles on November 5, at noon.

"We had beautiful weather on our home trip. Roads were fair to good, many rough stretches were struck, particularly through Arizona and Missouri. We passed through Oatman, Seligman, the Grand Canyon, Springerville and Winslow, Arizona, Secorro, Albuquerque, Santa Fe and Raton, in New Mexico, and thence through Kansas City, Fulton, Illinois, Indianapolis, Zanesville, Washington, Pennsylvania, Cumberland, Maryland, Wilmington, Delaware, Philadelphia, New York City and then home, arriving November 27th, making the round trip in exactly seven weeks.

"We traveled in all 7462 miles. No breakage whatever was experienced and the car was not laid up for a single day. No money was expended on the car, save for relining the brakes and replacing the fan belt."

"The road from Klamath Falls to Fort Klamath is new and the twenty-five mile ride on the bluff along the edge of Klamath Lake is unsurpassed for scenery.

"From Fort Klamath to Crater Lake National Park is eleven miles of stiff climbing. It was necessary to cut a trench through the snow, three to ten feet deep, through which we were able to ride right up to the rim of the crater.

"The crater is six miles across and is filled with water which is deep indigo blue in color. The jagged, snow-covered walls of the crater rise around the lake to a height of from one thousand to fifteen hundred feet.

"Wizard Island, a conical mass of lava a thousand feet high, lies at one side of the lake, which is practically bottomless, having been measured to a depth of 2000 feet. The trip down the ice-covered walls of the crater to the water's edge and the boat ride to the island are very exciting and worth-while.

"On the trip I covered 2500 miles of roads and averaged 19.2 miles to the gallon of gasoline with 'Nellie' my Buick D-Six-45."



Trench through the snow near Crater Lake

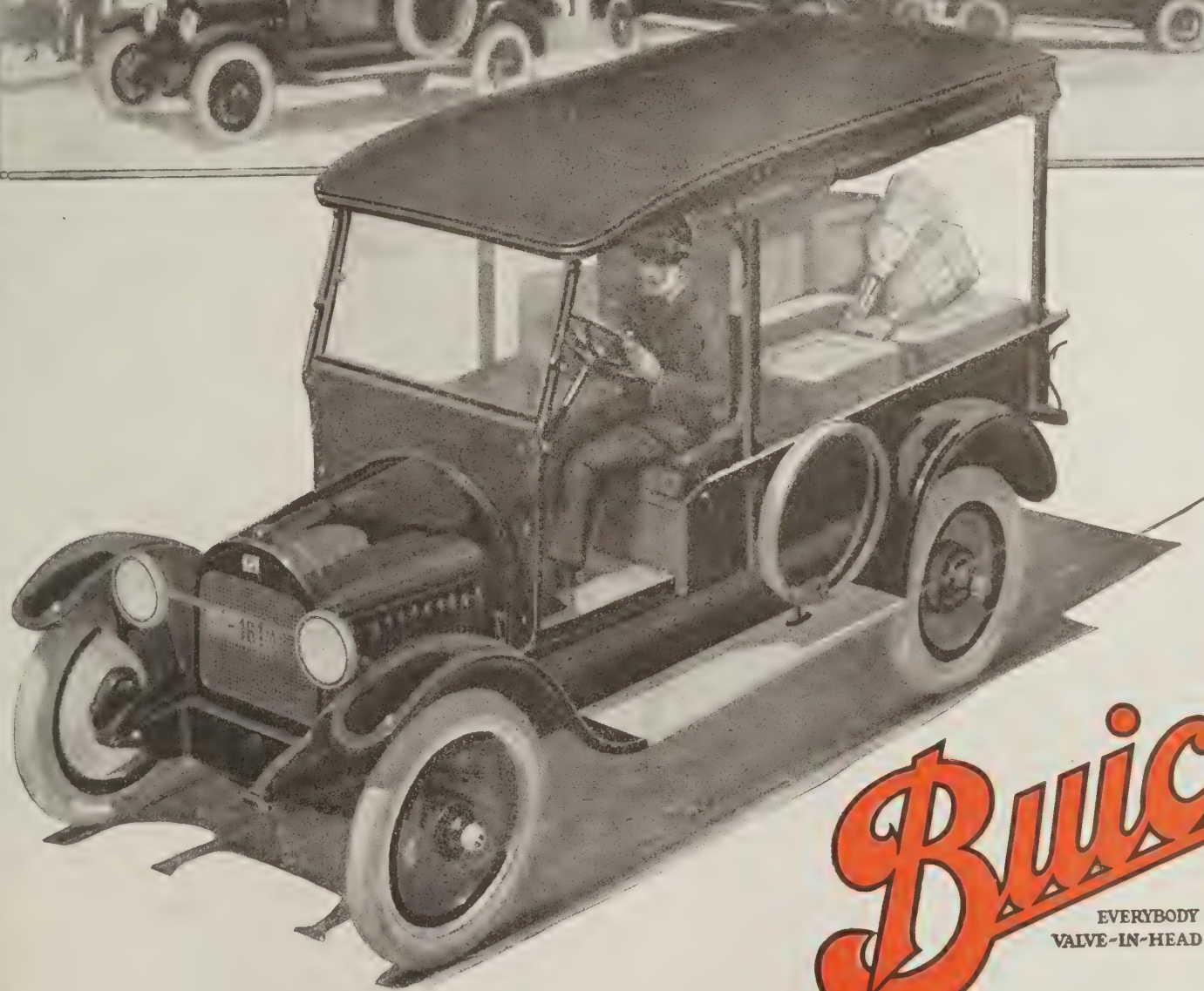


Mr. Tarstegge's Buick on a fallen Sequoia

The largest, General Sherman (all over ten feet have names) is thirty-six and one-half feet in diameter, one hundred and five feet around and two hundred and eighty feet high.

"Once in awhile one comes across a fallen monster. One prone monarch is shown in the picture, with my Buick on it. I had quite a time getting it there, too. This tree is a trifle more than thirty feet in diameter. I stood out on one of its great roots over forty feet above the ground to take the picture. This forest is in a comparatively unknown part of the Sierras, on account of its being difficult of access. It is well worth the trip, however, for aside from the trees (which grow at an elevation of from eight to nine thousand feet) there are many other notable features, such as box canyons of the Kern and Kings rivers; Moro rock, a column of white granite rising sheer two thousand feet, the view from the top of which is well worth the climb. Last, but not least, it is only a short distance from Mount Whitney, the highest peak in the United States proper. It is an ideal place for a vacation.

"In mountain climbing the Buick leads."



Buick

EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK

The Buick Valve-in-Head E-4 Light Delivery

The necessity for efficiency in the delivery end of any business increases every time the price of labor and supplies increases.

There are many superior features about the Buick E-4 Light Delivery, but the most important of these to the purchaser is its ability to handle an immense amount of material in a day, and every day, at an unusually low cost.

This car was designed and built at the Buick factory for light delivery work only. It is light but exceedingly sturdy, and its electric starter and accessible body save a great deal of time that is ordinarily wasted in delivery work.

BUICK MOTOR COMPANY

Pioneer Builders of Valve-in-Head Motor Cars

FLINT, MICHIGAN



DISTANCE is one of the greatest foes of the farmer. It handicaps him at every turn, making it inconvenient for him to get necessary supplies and placing great obstacles between his produce and his market.

The reliable Buick Valve-in-Head motor car overcomes distance. It saves an enormous amount of precious time. It is so simple and easy to operate that the womenfolk can drive it to town with a load of perishable goods, do the buying and return in time to take care of their other duties. It releases a team

of horses for farm use, leaving the men free to oversee the work in the fields.

The Buick car is ideal for the farmer's use. It is so well-built that it will stand the hardest service, and its powerful Buick Valve-in-Head motor fears neither hills, mud nor sand.

BUICK MOTOR COMPANY, Flint, Michigan

Pioneer Builders of Valve-in-Head Motor Cars

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THE Buick BULLETIN

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of the Buick Motor Company

JULY 1918

FIVE CENTS



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NEFF

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"Thou, too, sail on, O Ship of State!
Sail on, O UNION, strong and great!
Humanity with all its fears,
With all the hopes of future years,
Is hanging breathless on thy fate!
We know what master laid thy keel,

What workmen wrought thy ribs of steel,
Who made each mast, and sail and rope,
What anvils rang, what hammers beat,
In what a forge, and what a heat
Were shaped the anchors of thy hope!"

—Longfellow.

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Number Seven

The Dog that Saved the Bridge

by

Charles G. D. Roberts



THE old canal lay dreaming under the autumn sun, tranquil between its green banks and its two rows of stiffly-trimmed, bordering poplars. Once a busy highway for barges, it was now little more than a great drainage ditch, with swallows and dragonflies darting and flashing over its seldom-ruffled surface. Scattered here and there over the flat, green meadows beyond its containing dykes, fat cows lay lazily chewing the cud.

Along the grass-grown towpath, marching in half sections, came a tiny detachment of long-coated Belgian riflemen, with a machine gun. The deadly little weapon, on its two-wheeled toy-carriage, was drawn by a pair of sturdy, brindled dogs—mongrels, evidently, showing a dash of bull and a dash of retriever in their make-up. They were not as large as the dogs usually employed by the Belgians in this kind of service. But they were strong, and keen on their job.

The little band kept well under the trees as they went, lest some far-scouting aeroplane should catch sight of them. In the southeastern sky, presently, an aeroplane—a Taube—did appear, but it was so distant that the young lieutenant in command of the detachment, after examining it carefully with his field-glasses, concluded that it was little likely to detect his dark line moving under the trees. The Taube, that execrated Dove of Death, was spying over the Belgian trenches, and doubtless daring a hot fire from the Belgian rifles. Once it made a wide sweep northwestward, rapidly growing larger; and the little band under the trees lay down, hiding themselves and the gun behind the dyke. Then its flight swerved back over the Belgian lines; and the commander, lowering his glasses with a deep breath of relief, gave the order to march. Two minutes later, around the questing aeroplane appeared a succession of sudden, fleecy puffs of smoke, looking soft and harmless as cotton wool. One of these came just before the nose of the aeroplane. Next moment the machine gave a great swoop-

ing dive, righted itself, dived again, and dropped like a stone.

"Thank God for that," muttered the young lieutenant; and his men cheered grimly, under their breath.

Three minutes later the detachment came to an old stone bridge. Here it halted. The men began hastily entrenching themselves, where they could best command the approaches on the other side. The machine gun, lifted from its little carriage, was placed cunningly behind a screen of reeds. The two dogs, panting, lay down in their harness under a thick bush. In an amazingly brief time the whole party was so hidden that no one approaching from the other side of the canal could have guessed there was anything more formidable in the neighborhood than the ruminating cows.

The neglected, almost forgotten, old bridge had suddenly leaped into importance. Reinforcements for the sore-pressed division to the southeast were being sent around by the north of the canal, and were to cross by the bridge. The detachment had been sent to guard the bridge at all costs from any wide-roving patrols of Uhlans, who might take it into their heads to blow it up. In war it is a pretty safe principle

to blow up any bridge if you are quite sure you won't be wanting it yourself. The fact that the other side has spared it is enough to damn it offhand.

For perhaps an hour the detachment had lain concealed, when those ominous pillars of smoke against the sky were joined suddenly by swarms of the little white puffs of cotton wool, and the confused noises redoubled in violence. The battle was swaying nearer, and spreading around a swiftly widening arc of the low horizon. Then another aeroplane—another bird-like Taube—came in view, darting up from a little south of west. The young lieutenant, in his hiding-place beside the bridge-head, clapped his glasses anxiously to his eyes. Yes, the deadly flier was heading straight for this position. Evidently the Germans knew of that out-of-the-way bridge, and in their eyes also, for some reason, it had suddenly acquired importance. The Taube was coming to see in what force it was held.

Flying at a height of only five or six hundred metres, the Taube flew straight over them. There was no longer any use in attempting concealment. The riflemen opened fire upon it furiously as soon as it came within range. It was hit several times; but the Taube is a steel machine, well protected from below, and neither the pilot nor any vital part of the mechanism was damaged. It made haste, however, to climb and swerve away from so hot a neighborhood. But first, as a message of defiance it dropped a bomb. The bomb fell sixty or seventy yards away from the bridge, back in the meadow, among a group of cows. The explosion killed one cow, and wounded several. The survivors, thus rudely shocked out of their

indifference, stampeded off down the field, tails in air, and bellowing frantically.

"That cooks our goose," snapped one of the riflemen concisely.

"Their shells 'll be dead onto us in ten minutes' time," growled another. And all cursed soberly.

"I don't think so!" said the young lieutenant, after a moment's hesitation. "They want the bridge; so they won't shell it. But you'll see they'll be onto us shortly with their mitrail-leuse, and a half a battalion or so, enough to eat us up. We've got to get word back *quick* to the General, for reinforcements, or the game's up."

"I'll go, my Lieutenant!" said Jean Ferreol, an eager, dark Walloon, springing to his feet.

The lieutenant did not answer for some moments. He was examining through his glasses a number of mounted figures, scattering over the plains to the rear in groups of two and three. Yes, they were Uhlans unquestionably. The line of combat was shifting eastward.

"No," said he, "you can't go, Jean. You'd never get through. The boches are all over the place back there, now. And you wouldn't be in time, even if you did get through. I'll send one of the dogs."

He tore a leaf out of his note-book and began scribbling.

"Better send both dogs, my Lieutenant," said Jan Steen, the big broad-built Fleming who had charge of the machine-gun, unharnessing the dogs as he spoke. "Leo's the cleverest, and he'll carry the message right; but he won't have his heart in the job unless you let Dirck go along with him. They're like twins. Moreover the two together wouldn't excite suspicion like one alone. One alone the boches would take for a messenger dog sure. But two racing over the grass might seem to be just playing."

"Bon," said the young lieutenant. "Two strings to our bow."

He hurriedly made a duplicate of his despatch. The despatch was folded small and tied under the dogs' collars. Big Jan spoke a few words crisply and decisively, in Flemish, to Leo, who watched his lips eagerly and wagged his tail as if to show he understood. Then he spoke similarly, but with more emphasis and reiteration, to Dirck, at the same time waving his arm toward the distant group of roofs from which the detachment had come. Dirck looked anxiously at him, and whined, and then glanced inquiringly at Leo, to see if he understood what was required of them. He was almost furiously willing, but not so quick to catch an idea as his more lively yoke-fellow. Big Jan repeated his injunctions yet again, with unhurried patience, while his leader fumed behind him. Jan Steen knew well that with a dog, in such circumstances, one must be patient though the skies fall. At last Dirck's grin widened, his tail wagged violently, and his low whining gave way to a bark of elation.

"He's got it," said Jan with slow satisfaction. He waved his arm, and the two dogs dashed off as if they had been shot out of a gun, keeping close along the inner base of the dyke.

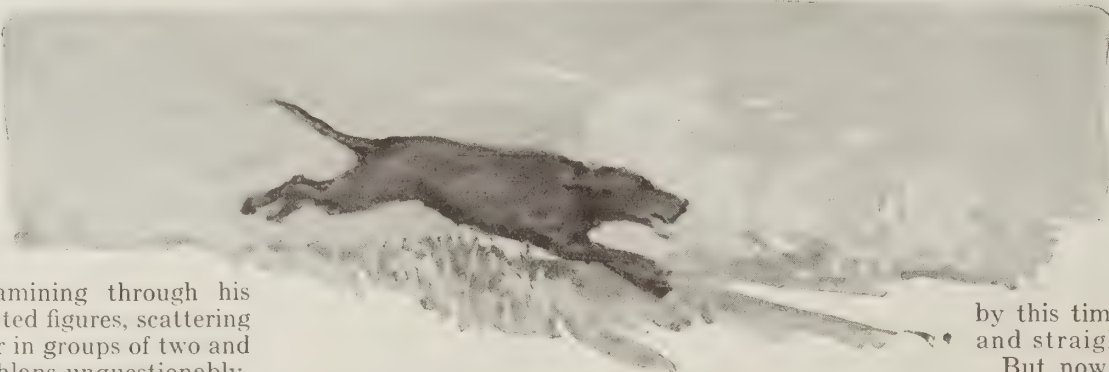
Side by side, racing wildly like children just let out from school, the two dogs dashed off through the grass along the base of the dyke. Leo, the lighter in build and in color, and the more conspicuous by reason of a white fore-leg, was also the lighter in spirits. Glad to be clear of the harness, and proud of his errand, he was so ebullient in his gaiety that he could spare time to spring into the air now and again and snap at a low-fluttering butterfly. The more phlegmatic Dirck, on the other hand, was too busy keeping his errand fixed in his mind to waste any interest on butterflies, though he was ready enough to gambol a bit whenever his volatile comrade frolicked into collision with him.

Soon—Leo leading as usual—they quitted the dyke and started off across the open meadows toward the hottest of the firing. A couple of patrolling Uhlans, some distance off

to the right, caught sight of them, and a bullet whined complainingly just over their heads. But the other Uhlan, the one who had not fired, rebuked his companion for wasting ammunition. "Can't you see they're just a couple of puppies, larking around?" he asked scornfully. "Suppose you thought they were Red Cross."

"Thought they might be despatch-dogs, Herr Sergeant," answered the trooper deprecatingly.

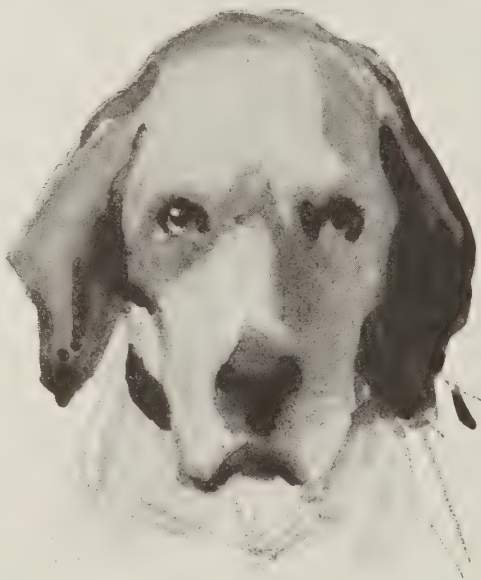
"Well, they're not, blockhead," grunted the cocksure sergeant. And the two rode on, heading diagonally toward the canal.



The dogs, at the sound of the passing bullet, had crouched flat to the ground. When the sound was not repeated, however, they sprang up and continued their journey—Leo, excited but not terrified, more inclined to frolic than ever, while Dirck, who by some obscure instinct had realized that the shot was not a chance one but a direct personal attack, kept looking back and growling at the pair of Uhlans.

But though Leo, the exuberant, gambolled as he ran, he ran swiftly none the less, so swiftly that plodding Dirck had some trouble to keep up with him. Ten minutes more and they ran into the zone of fire. Bullets hummed waspishly over them, but, after a moment's hesitation they raced on. The German infantry were in position, quite hidden from view, some six or seven hundred yards to the right. They were firing at an equally invisible line of Belgians, who were occupying a drainage ditch some three hundred yards to the left. The two dogs had no way of knowing that the force on their left was a friendly one, so they kept straight on beneath the cross-fire. Had they only known, their errand might have been quickly accomplished.

A little further on the grass land came to an end and there was a naked, sun-baked stubble-field. As the two raced out over this perilous



open space the battle deepened above them. The fire from the Belgian side went high over the dogs' heads, seeking the far-off target of the enemy's prostrate lines. But the German fire was sighted for too close a range, and the bullets were falling short. Here and there one struck with a vicious spat close to the runner's feet. Here and there a small stone would fly into the air with a sudden, inexplicable impulse, or a bunch of stubble would hop up as if startled from its roothold. A ball just nicked the extreme tip of Dirck's tail, making him think a hornet had stung him. With a surprised yelp he turned and bit at his supposed assailant. Realizing his mistake in a second he

dropped the injured member sheepishly and tore on after Leo several paces ahead.

Next second a shrapnel shell burst overhead with a shattering roar. Both dogs cowered flat, shivering. There was a smart patter all about them, and little spurts of dust, straw, and dry earth darted upwards. The shrapnel shell was doubtless a mere stray, an ill-calculated shot exploding far from its target. But to Leo it seemed a direct attack upon himself.

Another shrapnel shell burst in the air, but further away than the first, and Leo marked where the little spurts of dust arose. They were well behind him. The rifle bullets pinging overhead were higher now, as the Germans were getting the range of the Belgian line.

The tiny canal-side village which was the goal of these two devoted messengers was

by this time less than a mile away, and straight ahead.

But now the spectacle of the two dogs racing desperately towards the village under the storm of lead and shell had caught the attention of both sides. There was no question, either, as to which side they belonged to. The German bullets began to lash the ground like hail all about them. Leo stopped and a German sharpshooter got the range of him exactly. A bullet crashed through his sagacious brain; and he dropped, with his muzzle between his legs.

But Dirck, meanwhile, had refused to follow his leader's example. His goal was too near. He saw the familiar uniforms. Above the din he could detect the cries and calls of encouragement from his people. Every faculty in his valiant and faithful being bent itself to the accomplishment of his errand. The bullets raining about him concerned him not at all. The crash of a shrapnel shell just over him did not even make him cock an eye skyward. The shrapnel bullets raised jets of dust before and behind him, and on either side. But not one touched him. He knew nothing of them. He only knew his lines were close ahead, and he must reach them.

The Belgians cheered and yelled, and poured in a concentrated fire in that section of the enemy which was attacking the dog. For a few seconds that small, insignificant, desperate, four-footed shape drew upon itself the undivided attention of several thousand men. It focussed the battle, for the moment. It was only a brindled dog, yet upon its fate hung immense and unknown issues. Everyone knew now that the devoted animal was carrying a message. The Germans suddenly came to feel that to prevent the delivery of that message would be like winning a battle. The Belgians turned a battery from harrying a far-off squadron of horse to shell the lines opposite in defense of the little messenger. Men fell by the score, on both sides, to decide that unexpected contest.

And still Dirck raced on, heedless of it all.

Then, within fifty yards of the goal, he fell. A bullet had smashed one of his legs. He picked himself up again instantly and hobbled forward, trailing the mangled limb. But the moment he fell a score of riflemen had leaped out to rescue him. Three dropped on the way out. Half a dozen more fell on the way back. But Dirck, whining and licking his rescuer's hands, was carried to shelter behind the massive stone wall of the inn yard, where the Brigadier and his officers were receiving and sending out despatches.

An aide drew the message from under Dirck's collar, and handed it, with a word of explanation, to the general. The latter read it, glanced at the time on the despatch and then at his watch, and gave hurried orders for strong reinforcements to be rushed up to the old bridge. Then he looked at Dirck, whose shattered leg was being dressed by an orderly.

"That dog," he growled, "has been worth exactly three regiments to us. He's saved the bridge, and he's saved three regiments from being cut off. See that he's well looked after and cured as soon as possible. He's a good soldier, and we'll want him again."

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

IT is both interesting and profitable, from time to time, for us who are engaged in the manufacture, sale or use of motor cars, to briefly summarize the fast moving events of motor history, and to make comparisons that will give us an intelligent grasp on the present situation.

We can all remember the various stages of the industry's development, even to the time when a few "horseless carriages" chugged uncertainly along the streets and caused the conservative people of twenty years ago to shake their heads knowingly and predict a short career for the motor car.

In those days a motor car designer was in a class with a man with the germ of a great idea which the public were entirely unable to grasp. His first attempts were crude to a degree, and because of insufficient practical experience both in designing and manufacturing, the motor car for several years was entirely lacking in reliability and performance. Capital, too, was wanting, but in spite of handicaps the work was carried on and by degrees the application of the engineering principles developed in practicability.

Progress in Design

ONE of the earliest pioneers in this new field was the Buick Motor Company. The Buick factory in those days was a little frame building, and about the only thing it possessed in common with the present mammoth plant was the Valve-in-Head principle of motor design.

Real progress was made in the design of the various units, and while some headway was gained in manufacture, the application of the engineering principles was what received the most serious thought and effort.

This is in line with the development of every other invention. It is only after the design of a commodity is perfected to a reasonable degree that the question of efficient manufacture receives its greatest impetus.

A motor car twenty years ago was worth all that was paid for it. As it grew in reliability and performance, and also in cost, it was still worth the purchase price because of the conditions under which it was produced. At the same time, the Buick owner of today will receive quite a shock if he will pick up a catalog of some seven or eight years ago and compare the relative values and prices of the cars there listed with the serviceability and cost of his present Buick car.

Take a car that was then marketed for \$1800. The top, windshield, Prest-O-Lite tank and other equipment were extra, and by the time the car was delivered to the owner it had cost him upwards of \$2000. The Buick motor was a serviceable Valve-in-Head type

and the other mechanical parts ranked with the best that the industry then knew. But there were no electric lights; the car was cranked by hand; the body was of a quaint design, without fore-doors; the wheelbase was short; there were no modern dash instruments, and other present-day conveniences and comforts were lacking.

Manufacturing Efficiency

IN short, the contrast in the dollar-for-dollar value in the two cars is remarkable. What is it that has made this difference possible in so short a time? A hasty answer might be that it is due to large quantity production, and this is partly true. But it should also be pointed out that if Buick cars were built under the same methods today as they were eight years ago, the present selling price would be vastly greater on account of all the modern conveniences that have been added. The advantage of purchasing material in much larger quantities would be offset by the present advanced prices of materials and by the vastly increased cost of labor.

So the real answer is efficiency. With the increased demand every year for Buick cars, the factory has grown to really tremendous proportions, and the development of the various departments to take care of the increased number of cars has been conducted along lines as scientific and efficient as the development of the engineering features of Buick cars.

The growth of the Buick factory may be compared to the growth of a tree. As the branches spread out in every direction and become larger and larger with each succeeding season, the trunk enlarges in girth and strength and the roots expand in just the right proportion to take care of future growth.

The Buick factory is organized along exactly these same lines. When it is necessary to enlarge the departments to take care of the increased demand for Buick cars, the addition is made directly to each department, either in the form of additional floor space or by means of newer and more modern machinery that will permit the production stream to flow faster and still faster through the departments.

Harmony Between Departments

THE engineering division has multiplied in men and efficiency. In addition to the chief engineer and his assistant designers, there is a trained force of men who conduct the research, experimental and testing work under their direction. There are laboratories for chemical, physical, electrical and metallurgical work, equipped with a priceless collection of scientific instruments and machines. There are

the "field men" who work continually in the factory devising newer and better methods of design and manufacture. And all this effort is concentrated on the sure development of the Valve-in-Head principle and other Buick features, to improve the Buick car from time to time and do it constructively, rather than to re-design it each year for the sake of having new models to offer.

This engineering organization works in harmony with the factory departments. Under this method the lost motion has been worked out of every Buick manufacturing department, and in many cases these departments have been made to produce two or three times as many parts as formerly without increasing the floor space, simply by the introduction of improved machinery or some improvements in design, or both.

External conditions are met in much the same manner, by analyzing the problems from every angle and then solving them. Buick cars today give greater mileage on a gallon of gasoline than they did several years ago, in spite of the fact that the quality of the gasoline has deteriorated every year. They give more mileage on tires for every pound of weight because the distribution of weight and the spring suspension have been scientifically worked out. They offer greater comfort, reliability and satisfaction each succeeding year, at a lower cost of upkeep.

Comparative Values

FOR these reasons, the dollar-for-dollar value of Buick cars is greater today than at any previous time, and it actually costs less to own and operate them now than ever before in spite of the fact that the problem of producing them now is bigger than it has ever been. They are proportionately lower in first cost than any other standard commodity, whether it is foodstuffs, clothing, machinery or what not.

The efficiency methods used in their manufacture has naturally increased the efficiency of the cars themselves, with the result that they actually do more for their owners than ever. With the increased cost of labor and materials, the element of time becomes more and more valuable to every citizen, and the motor car is an essential to every busy man.

This is the basis on which value must be judged. The motor car is primarily a time-saving device—in other words, it is valuable in proportion to its ability to expand the capacity of the individual. In comparison with other cars, its dollar-for-dollar value is established by its comparative dependability and usefulness in proportion to its cost, and this is purely a matter of correct design and efficient manufacture.

Buick Manufacturing Efficiency

WHEN the design of a motor car has been passed upon by the chief engineer and the blue prints and specifications are turned over to the manufacturing division, an entirely new chapter of the motor car story begins.

The question then is to reproduce the sample cars built by the engineers in such a manner that they will all be uniform in quality and performance.

This is not a simple matter. It means that every operation on every one of the thousands of parts going into the makeup of those cars must be standardized, and that no matter how insignificant any single operation may be in itself, it automatically becomes a vital factor in the effectiveness of each of the finished cars. A car is not complete until every little screw and spring and cotter pin is properly made and in its proper place.

So the production of motor cars resolves itself into the handling of an infinite number of details, so that every part will be built of exactly the right size and material and be interchangeable on any one of many cars.

There are very clearly defined laws that govern effective manufacture, and the extent to which these laws are obeyed in letter and spirit determines the ultimate efficiency of the factory, and a big percentage of the value of the finished cars.

The efficiency of the Buick factory has long been a matter of pride to the officials and employes at Flint, and while a complete description of this efficiency would be too lengthy to attempt in these pages, a very good insight into the Buick system as a whole can be obtained from a trip through the Buick foundry. This description will of necessity be confined to the method of handling materials and the machinery and equipment installed to do the work.

Handling is one of the biggest items of expense encountered in manufacture and is largely what makes up the difference in cost of raw and finished materials. Therefore, the less duplication of effort there is in a factory and the less needless handling there is of the various parts and materials, the greater the efficiency becomes. This means building the best possible product at the lowest possible price.

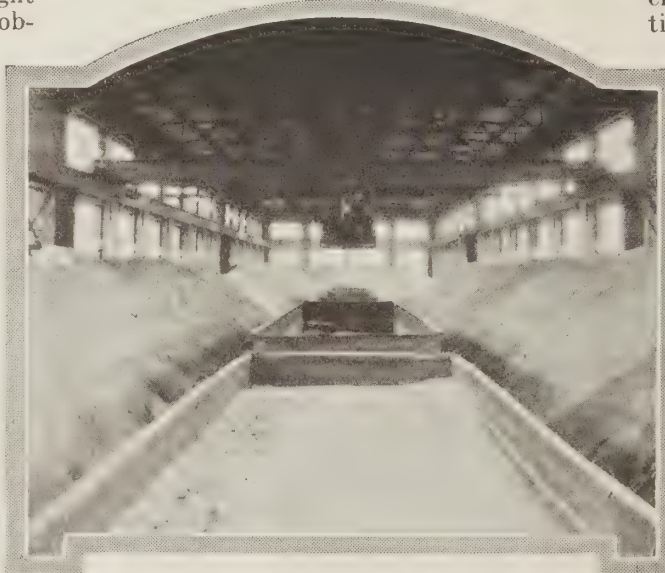
To work this out in a practical manner, it is necessary that the production stream flow in one direction, without any eddies or meanderings to hinder its steady progress.

The material used in the Buick foundry consists of pig iron, steel, limestone, coke and several kinds of sand for making cores, molds, facing and so on. The brass and aluminum castings are made in another foundry in a different factory building.



A view of the Buick foundry storage yard, spur track and twenty-ton traveling crane. All material is brought to this point in freight cars, which are unloaded by means of the traveling crane, which is capable of making a round trip every minute from the cars to the bins on the third floor platform. Electric grab buckets are used for limestone, sand and coke, and electric magnets for the steel and iron. Most of the coke goes to the charging floor by an incline from the coke storage yard and the sand is dropped from bottom-door cars into the basement sand pit.

At the rear of the foundry are the spur tracks on which the freight cars of material are placed for unloading. An electric crane with a capacity of twenty tons is so arranged



Sand for winter use in the Buick foundry is stored during the late summer months in this big building, because it is impossible to handle the sand to advantage during freezing weather outside. A spur track from the Buick yard system runs directly into the building, where the cars are unloaded by the traveling crane, which runs the full length of the building. At the far end is a hopper which connects with the monster belt conveyer in the foundry proper, delivering the sand directly to the points where it is to be used.

as to cover the spur tracks as well as the storage space between them and the building, where the reserve supply of pig iron, steel and stone is carried.

On the other side of the tracks is an immense covered storage building with a spur track running into it. This building is used for sand for winter use, as it cannot be handled outdoors during freezing weather. Ordinarily the sand is dropped from the dump cars into the sand pit in the basement of the foundry, being carried to the various sand elevators and mixers by means of a monster belt conveyer about 375 feet in length. This conveyer also connects with the winter storage building and brings the sand up into the foundry from an immense hopper, which is kept filled by another electric crane in the storage building.

The molding sand is taken by the belt conveyer to the first floor hoppers, from which it passes into rotary screens and thence automatically into elevators which lift it to the hoppers near the roof. These hoppers have their outlets on the second floor, where the molding is done, and the sand is removed by overhead monorail conveyers directly to the individual hoppers on the molding floor, so that the molders do not have to move from their benches.

The monorail conveyer just mentioned is one of a number with which this foundry is equipped, and is worthy of special description. It is a powerful electric car running on an overhead rail, operated by a driver. In addition to its motive power, it is fitted with an electric crane for lifting heavy loads of every description, and it runs from one point to another with great swiftness and perfect safety.

Properly prepared molding sand contains a certain percentage of sand that has been used for molding before. After coming from the molds the sand is more or less lumpy and contains a certain amount of scrap metal. It is therefore put through a "tempering" machine operated by electricity, which makes it of fine texture. The sand is then screened and mixed with new sand, when it is taken by the elevators to the hoppers again.

Core sand can be used but once, and is taken from the belt conveyer to the driers, as it must be perfectly dry in order to mix properly with the oils in the core compound. From the driers it goes to the core sand mixers, from which it drops into the elevators which carry it up to the hoppers on the core-making floor. It then goes via the monorail conveyers to the core making benches.

The facing sand, as it comes from the mixers, is placed in bottom dump buckets and taken by the monorail conveyers to the molding floor.



The molding sand is delivered to the screens and sand elevators by this grab bucket on an overhead conveyer. The belt conveyer from the sand pit is shown on the right.



The overhead monorail conveyers bring the molding sand to these hoppers beside the molding benches. The molds are shaken down by the pneumatic machine in the foreground.

It will thus be seen that while hundreds of thousands of tons of sand are handled in the Buick foundry yearly, it is all handled by a few men operating the efficient apparatus, and that the shovel and wheelbarrow method is not used in a single operation.

Going to the rear of the building again, we see the great crane lifting the iron and steel to the third floor, just behind the cupolas. The electric grab bucket has been replaced by an extremely powerful electric magnet, which drops into a freight car and picks up thirty or forty 100-pound pigs of iron like so many matches. Taking out our watches, we find that it makes the round trip from freight car to bin and back in exactly one minute.



Cores are made from sand mixed with core compound, which bakes hard at low temperatures and burns up at high temperatures when the molten metal is poured around the cores. After molding, the cores are taken to the baking ovens on these rubber-tired elevating floor trucks, which pick the racks up bodily and whisk them away to the ovens. The cores are baked right on the racks, which are afterwards removed and taken to the molding floors by the same trucks.



The five cupolas in the Buick foundry are arranged close together for convenience in charging, the molten metal being removed and carried to the molding floors by the electric crane conveyers, traveling on the overhead rail.

We also notice that the bins are arranged in the most orderly fashion, keeping the various materials separated, yet each kind convenient to the cupolas. When the iron bins are filled, up comes the supply of steel in the same manner, and then the crushed limestone via the electric grab bucket.

The loading of the five cupolas is done from this point—first a layer of coke, then a layer of limestone and then a layer of metal.

The coke is stored in the yard to the left of the building, being deposited by dump freight cars. From the storage yard it is delivered to the charging platform by means of a skip hoist, consisting of an incline and two "skips" at either end of a cable, the two balancing each other on their upward and downward trips. These "skips" are filled from a chute which is kept supplied by locomotive cranes.

In the core making department the cores are carefully molded, being reinforced with wires wherever necessary. A special department is operated in the basement to prepare the wire for this purpose. When formed, the cores are placed on large racks. When the racks are filled, they are lifted by electric floor trucks and run into the core baking ovens, and afterward to the molding floor in the same manner.

We now come to the important operation of pouring. The five cupolas which extend above the roof and are loaded from the third floor, have their pouring vents on the second, or molding floor. In other large foundries it has always been the practice to scatter the cupolas in order to get the molten metal to the pouring point before it cooled, the metal being hauled in large wheeled containers to the pouring point. But by the use of the monorail crane conveyers, it is possible in the Buick foundry to group the five cupolas together, where they can be charged efficiently and economically,

and then move the metal with great speed to the various pouring points.

When the castings have cooled, they are dumped onto long gratings which run cross-ways of the building. The molds being opened up, the molding sand drops through these gratings without further handling into a long sand trench on the first floor, where the tempering

machine goes through it from one end to the other and prepares it for use again.

The castings are then placed in chutes leading to the first floor, where part of the core sand is removed. The core sand, as well as the slag from the cupolas, is refuse and is taken by the monorail conveyor to a wing extending into the yard, dropped into wagons and hauled away.

At the bottom of the chute the castings are lifted from the platform by a pneumatic hoist and loaded on trucks. When several trucks have accumulated, they are made into trains and hauled to the cleaning room by an electric tractor, several tons at a time.

In the cleaning room the cores are removed entirely, and in the case of compli-



The disposition of refuse core sand and slag from the cupolas has been effectively solved in the Buick foundry by continuing the conveyor track out into the yard, where the load is dropped directly into wagons and removed.

cated castings such as cylinder blocks, the sand is jarred out by means of pneumatic hammers.

This work is done beside the sand blasting apparatus, so that the castings are lifted from the cleaning tables right into the sand blast.

From the sand blast the castings are lifted to the roller conveyor which carries them from one operation to another until finished.

The next step is to place them in the tumbling mills to polish, after which they are gone over by hand.

Then comes the water test for cylinders, to make sure that there are no flaws in the castings which might develop leaks. The water is put in under high pressure and if any leaks develop the cylinder block is discarded and melted over. This apparatus is worthy of comment, as there are nine holes that must be plugged up before the test is applied. The old method was to plug each of these holes by hand, but under the Buick method the entire nine are plugged by moving a single lever, the water is turned on by another and the test completed in half the time formerly required to plug the holes.

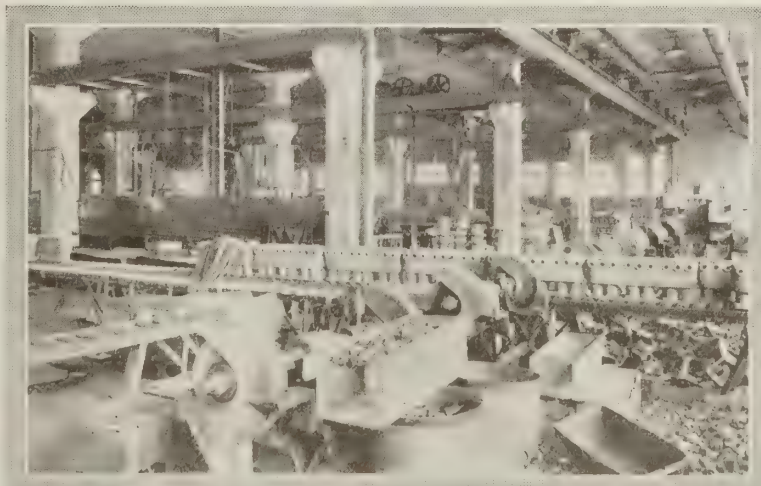
The cylinder then goes on the roller conveyor again and moves by gravity to the final operation of grinding off all burrs on emery wheels. Across from the grinders sit the final inspectors, who go over the castings and put them on the conveyers.

Spur tracks lead right up to the platform at the end of the conveyer, and the castings are loaded into waiting freight cars and hauled to the proper manufacturing departments.

In the basement of the foundry is a machine shop for making equipment to suit foundry conditions, and everywhere efficiency is carried to the highest possible point to eliminate lost motion. The same methods are followed through all Buick manufacturing departments, and it is this elimination of unnecessary expense that makes the low present selling prices and high quality of Buick cars possible.

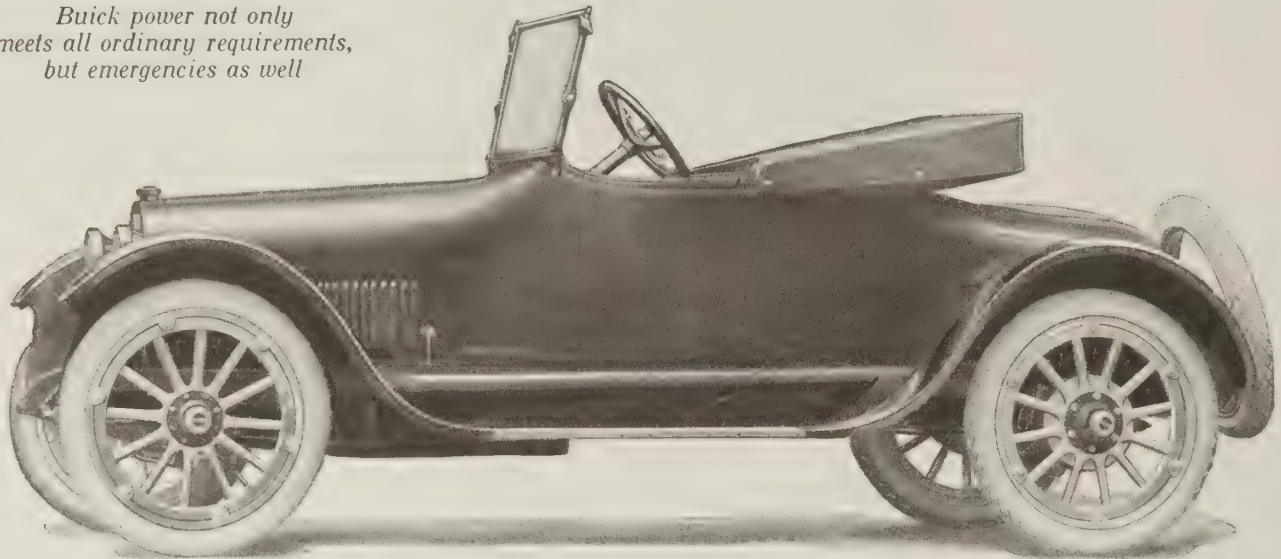


Buick castings are taken from the chutes and loaded on floor trucks, are then made into trains and hauled to the cleaning room by electric tractors.



Buick castings move on roller conveyers by gravity during the final operations, from the sand blasting to the final inspection, eliminating cartage.

*Buick power not only
meets all ordinary requirements,
but emergencies as well*



The Buick Model H-Six-44 Three-Passenger Car

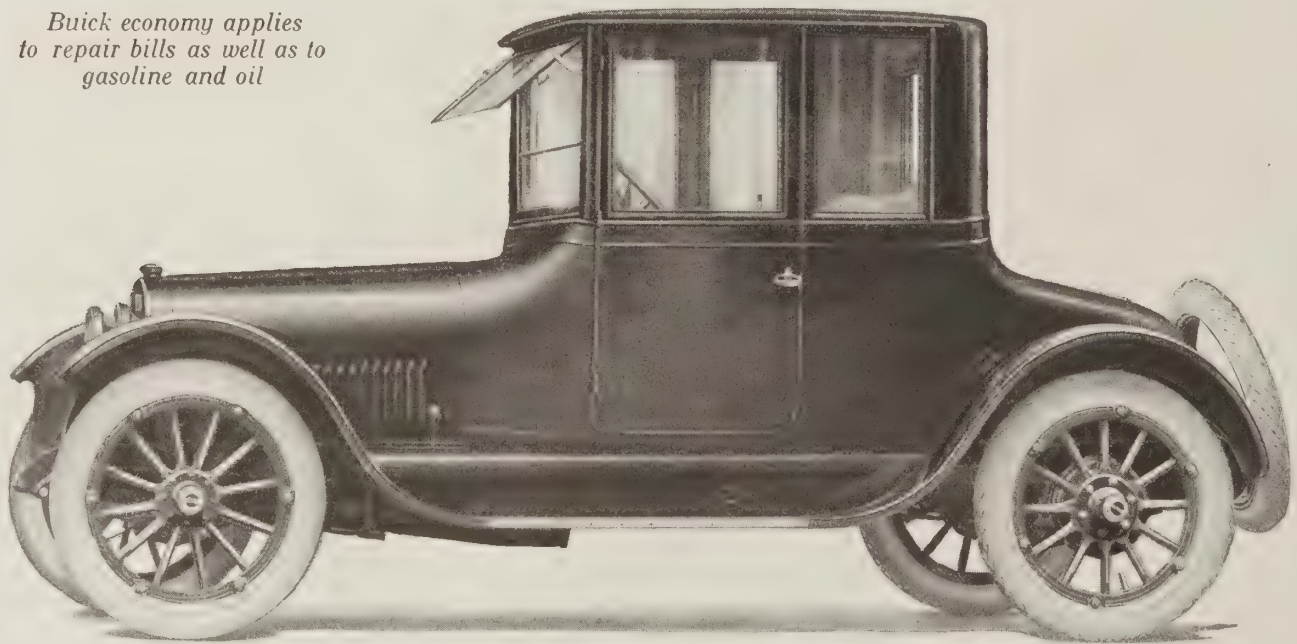
THE Buick Model H-Six-44 possesses marked advantages for the man or woman who wishes a car of limited passenger capacity, with a roomy and comfortable driving compartment. This model makes the most of these desirable features, without sacrificing one whit of the modish appearance that belongs to the type.

The body is distinctly a Buick creation, broadening out to accommodate a wide, deep seat for three, then curving in at the back to form a rear deck with a weather-proof carrying space.

The dimensions of the driving compartment insure easy entrance or exit from either side, with the control and brake levers well forward. The French pleated upholstery is built for long wear and comfort. The illuminated Buick instrument board contains the lighting and ignition switches, ammeter, speedometer, oil pressure gauge and dash choker for cold weather starting.

Inclined windshield, mohair top with close-fitting curtains, large gasoline tank and extra demountable rim complete the equipment.

*Buick economy applies
to repair bills as well as to
gasoline and oil*



The Buick Model H-Six-46 Four-Passenger Coupe

THE Buick Model H-Six-46 is a true Coupe with permanent sides and roof, and its disregard for road or weather conditions at any season makes it as useful as it is comfortable.

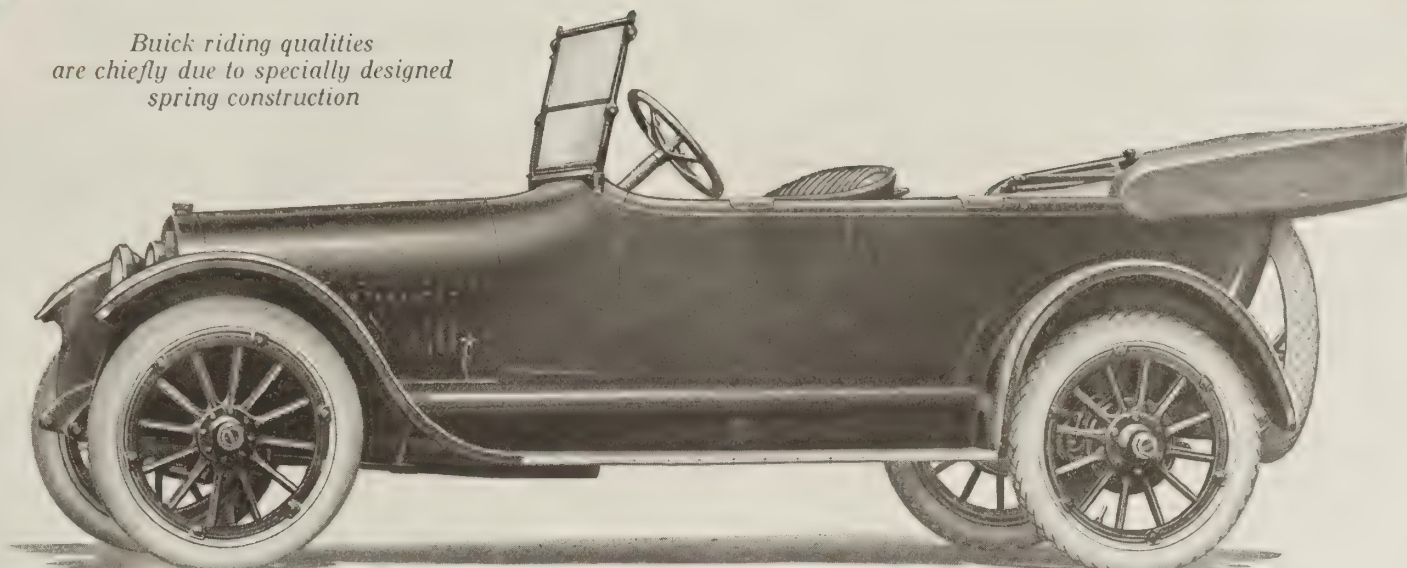
A Pullman type chair is provided for the driver, with a wide seat for two set slightly back of the driver's seat. This gives a wealth of room for three passengers and a fourth may be accommodated on the swinging seat under the cowl. A foot rest gives added comfort to passengers.

The back window is permanent, while the

side windows may be lowered, the door windows being equipped with patented handles to adjust the ventilation in conjunction with the three-piece windshield of the storm-vision type.

All of the deeply upholstered interiors are finished in soft gray automobile cloth. Back of the driver's seat is a carrying space, with another in the rear deck. A dome in the ceiling illuminates the interior, which may be securely locked from the outside, which gives protection against thieves or prowlers.

*Buick riding qualities
are chiefly due to specially designed
spring construction*



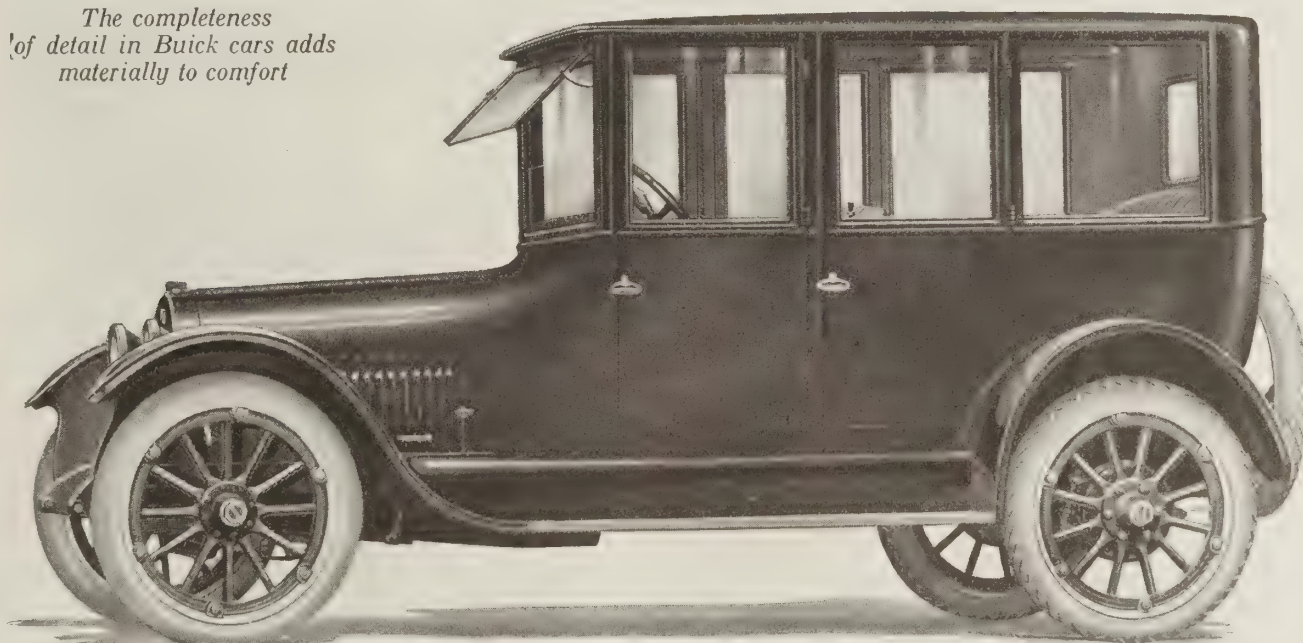
The Buick Model H-Six-45 Five-Passenger Car

THE Buick Model H-Six-45 is a very capable open car for five persons, designed to cover the multitude of uses to which such a car is put. It differs from the big seven-passenger model only in tonneau and chassis length, possessing the same degree of ruggedness, easy-flowing power and mechanical excellence.

There is far more comfort in the driving compartment than is usually found in cars of this type. The floor space is uncluttered and the seat is of great depth from front to rear.

The tonneau is even more liberally proportioned. The seat is full three-passenger capacity, set at a comfortable angle. The sides are upholstered clear to the doors with the same French pleated leather used on the cushions and seat backs. Each of the four doors is equipped with a side pocket for storing small parcels. The instrument board is illuminated by a dash lamp and the sloping windshield does away with the annoying front and rear reflections so frequently encountered in driving at night.

*The completeness
of detail in Buick cars adds
materially to comfort*



The Buick Model H-Six-47 Five-Passenger Sedan

THE Buick Model H-Six-47 follows the design of the big seven-passenger Buick Sedan very closely, the principal difference being in wheel-base and seating capacity. The quality of workmanship is the same throughout both body and chassis.

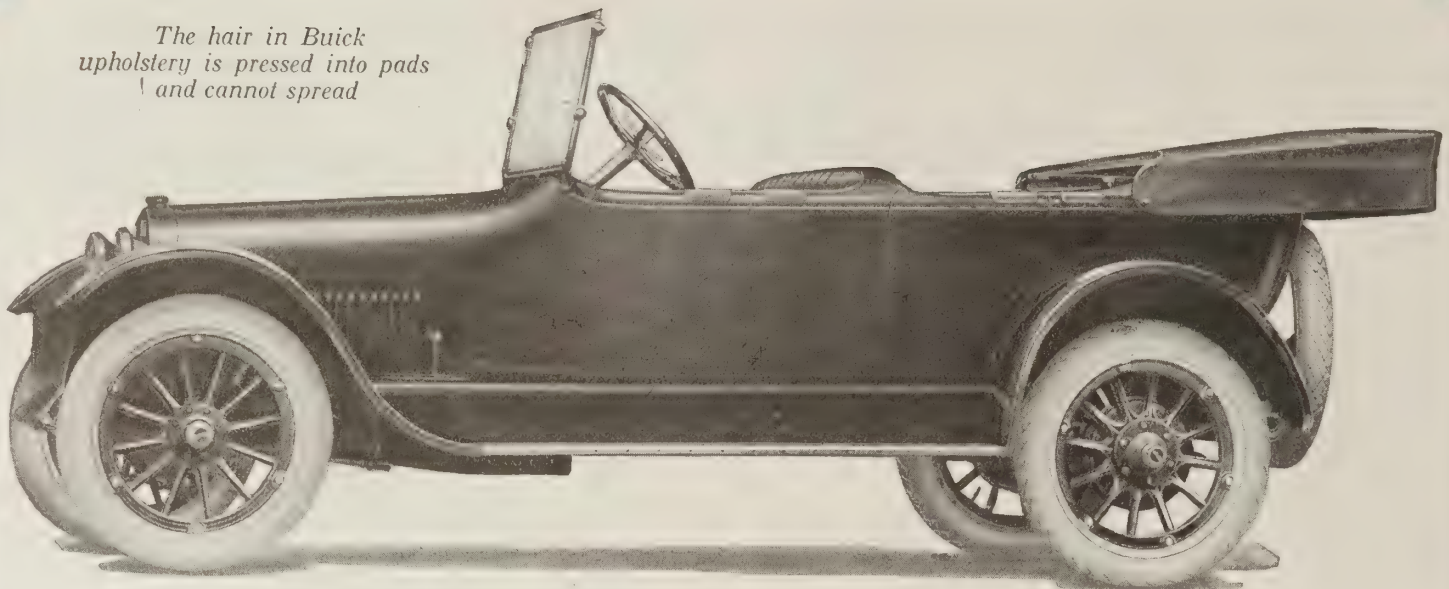
The driving compartment is equally roomy, and the front seat extends clear across the body.

The interior is finished in durable automobile cloth of beautiful soft gray, with specially designed deep upholstery on the cushions and

seat backs. Cold weather snugness or summer driving comfort are equally available by adjusting the three-piece windshield and moving the windows up and down by means of patented handles.

The rear seat accommodates three with perfect comfort. The tonneau carpet matches the upholstery. The standard Buick instrument board, always in plain view, furnishes every driving convenience, and a dome light in the ceiling illuminates the interior when required.

The hair in Buick upholstery is pressed into pads and cannot spread



The Buick Model H-Six-49 Seven-Passenger Car

THE Buick Model H-Six-49 is a big, roomy, open car for seven persons, with a range of service in keeping with its powerful Valve-in-Head motor. The long wheelbase, the extra size tonneau, the completeness of all details, give it an air of unlimited capacity that is amply borne out by its continued and consistent performance.

This car is divided amidships by a double cowl, into which the folding chairs disappear when not in service. These extra chairs are so arranged as to give liberal space both for the

occupants of the chairs and of the rear seat, to avoid possible crowding or cramped positions.

The slanting windshield braces form the front support for the one-man top, which is also equipped with close fitting side curtains that swing open with the doors.

The upholstery and finish of this big Buick model are exceptionally fine and durable. The illuminated instrument board is exceptionally complete, and a light located by the rear door illumines both the tonneau and step.

Many hand-rubbed coats of paint and varnish make Buick finish lasting



The Buick Model H-Six-50 Seven-Passenger Sedan

THE Buick Model H-Six-50 four-door Sedan is the latest development in closed car design. The front seat, instead of being divided, is full width, giving additional roominess to passengers and providing an extra brace to the body which adds considerably to its stability.

This arrangement makes the Buick Sedan eligible for any service an open car is used for, in town or country, with the added utility and comfort that belong exclusively to the closed car.

The doors are of generous width. The main

compartment accommodates two disappearing chairs, which are built for genuine comfort.

Silk shades on rollers afford privacy or shut out a too ardent sun. Ventilation is controlled by the adjustable windows and windshield, the door windows being fitted with patent handles. Two corner dome lights give the illumination required by the interior. Both rear doors and the left front door lock inside, and the right front door from the outside, to insure safety when leaving the car for any length of time.



The Symbol of Excellence

TO properly understand what the Buick nameplate on the radiator of a Buick car means to the owner of that car, it is necessary to know the principles for which that nameplate stands.

For nearly twenty years Buick Valve-in-Head motor cars have been in public service in practically every corner of the world, and while they have always been well in the van as far as conveniences and comforts are concerned, they have been chiefly noted for their stability and economy of operation over long periods of time.

This is because Buick cars are looked upon by all department officials of the Buick factory as fine machines, primarily.

As a result, Buick progress has been made along very definite lines, the chief object being to develop the various units consistently with regard to each other, incorporating the fruits of each year's developments in the succeeding year's product, at the same time retaining the benefit of past experience.

The result is that Buick cars each year have been remarkable for their

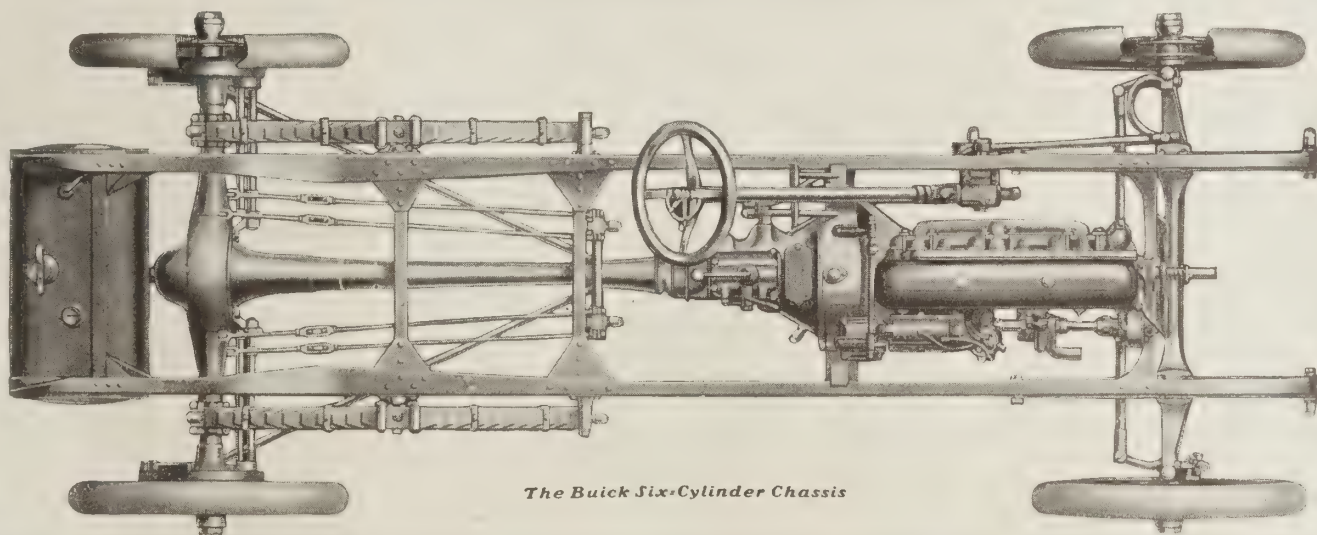
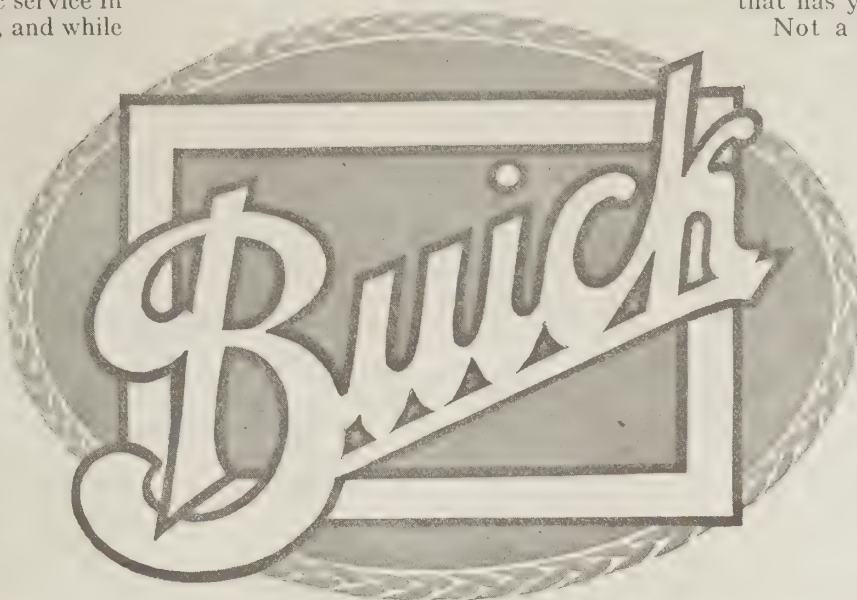
serviceability. This is not to be wondered at because there has never been a single feature of their construction that has not been thoroughly proven by actual service.

The motor, as the most important single unit in the cars, has always been of the Buick Valve-

in-Head type, because experience has demonstrated that when properly designed it gives more power and efficiency than any other. Like all the other working units, it has been developed from year to year, and the present Buick models represent the greatest perfection that has yet been attained in Buick cars.

Not a single mechanical unit has been slighted, and there is no weak link in the chain of Buick serviceability. The cars may be depended upon implicitly no matter what the nature of the service may be, because their strength and power are backed by a factor of safety that takes care of unusual demand as well as the steady, constant pressure of everyday driving conditions.

Comforts and conveniences have received their proper share of attention, and the Buick owner has the satisfaction of knowing that his car is modern in every particular. But the greatest satisfaction of all is afforded by the inbuilt serviceability which is guaranteed by the years of experience for which the Buick nameplate stands.



The Buick Six-Cylinder Chassis

BUICK SPECIFICATIONS FOR NINETEEN-NINETEEN

BODIES—

H-Six-44, 3-pass. Open Model
H-Six-45, 5-pass. Open Model
H-Six-46, 4-pass. Coupe
H-Six-47, 5-pass. Sedan
H-Six-49, 7-pass. Open Model, with double cowl, folding and disappearing extra seats.
H-Six-50, 7-pass. Sedan, with folding and disappearing extra seats.

UPHOLSTERY—Open Models, dull finish black leather, deep, comfortable, buttonless cushions, molded over curled hair and soft cushion springs. Closed models are upholstered in automobile cloth.

CONTROL—Friction retained spark and throttle levers on top of steering wheel. New button type foot accelerator. Pedals for clutch, service brake and starter. Levers for gear shifting and emergency brake conveniently placed in center of driving compartment.

WHEELBASE—Models H-Six-44, -45, -46, -47, 118 inches. Models H-Six-49, -50, 124 inches.

MOTOR—Six-cylinder, four cycle. Valve-in-Head type, automatically lubricated. Unit power plant, suspended at three points from main frame. Cylinders 3 3/8-inch bore by 4 1/2-inch stroke, semi-steel bloc casting. Extra heavy crankshaft with four large bearings. Exceptionally light pistons and connecting rods. Large valves mounted in cages and readily accessible, operated by noiseless adjustable push rods. Sixty actual brake horsepower.

COOLING—Water cooled with centrifugal circulating pump, driven by spiral gears. Cellular type radiator, pressed steel radiator fan, driven by adjustable flat belt from camshaft.

LUBRICATION—Self-contained, constant level circulating splash system, operated by self-thawing gear pump driven by spiral gears from camshaft and completely enclosed in lower part of crankcase. New style oil level gauge and petcock on crankcase, oil pressure gauge on instrument board.

CARBURETOR—Automatic float feed type, supplied by vacuum system from gasoline tank, mounted on rear end of frame. Air regulator on instrument board.

IGNITION—High tension, jump spark system, current supplied by Delco generator and storage battery. Automatic spark advance with manual control by lever on top of steering wheel.

STARTER—Complete Delco, single unit system for electric starting, lighting and ignition, built as an integral part of the motor and operating in conjunction with large storage battery. Combination switch with ammeter and automatic circuit breaker on instrument board.

CLUTCH—Multiple disc, dry plate type, smooth in engagement and positive in action. Ball bearing release collar, fully adjustable for wear. Lubricated by two grease cups located outside the case.

TRANSMISSION—Selective sliding gear type, three speeds forward and reverse. Special heat-treated, positive interlocking hand control, integral with gearset.

DRIVE—Through single large, automatically lubricated universal joint and fully enclosed propeller shaft, through spiral bevel gears in rear axle. Propeller shaft housing connected directly to rear end of transmission by large ball joint enclosing universal. Both torque and drive taken through ball joint.

REAR AXLE—Full floating type, with entire weight of car carried on the housing. Wheels driven by detachable shafts mounted on large double row annular ball bearings. Differential mounted on tapered roller bearings. Propeller shaft on double and single row annular ball bearings. Spiral bevel type driving gears, fully adjustable and extremely quiet.

BRAKES—Service brake, external contracting type; emergency brakes, internal expanding type, both operating on rear wheel drums. Fully adjustable for wear.

FRONT AXLE—Drop forged I-beam section, double heat treated, with integral yokes, drop forged steering knuckles and tie rod yokes. Taper roller bearings for front wheels.

WHEELS—Wood, artillery type, with large hub flanges, 12 spokes, demountable rims.

TIRES—Models H-Six-44-45-46-47, 33x4 inch. Models H-Six-49-50, 34x4 1/2 inch.

STEERING GEAR—Semi-irreversible, split nut and worm type, with large adjustable ball thrust bearing to take up wear. Steering wheel, with horn button in center. Spark and throttle levers on top of wheel.

FRAME—Reinforced, pressed steel, channel section, with exceptionally deep and stiff side members. Four heavy cross members. Integral gasoline tank supports.

SPRINGS—Front, semi-elliptic type; rear, full floating cantilever type, exceptionally long and easy riding.

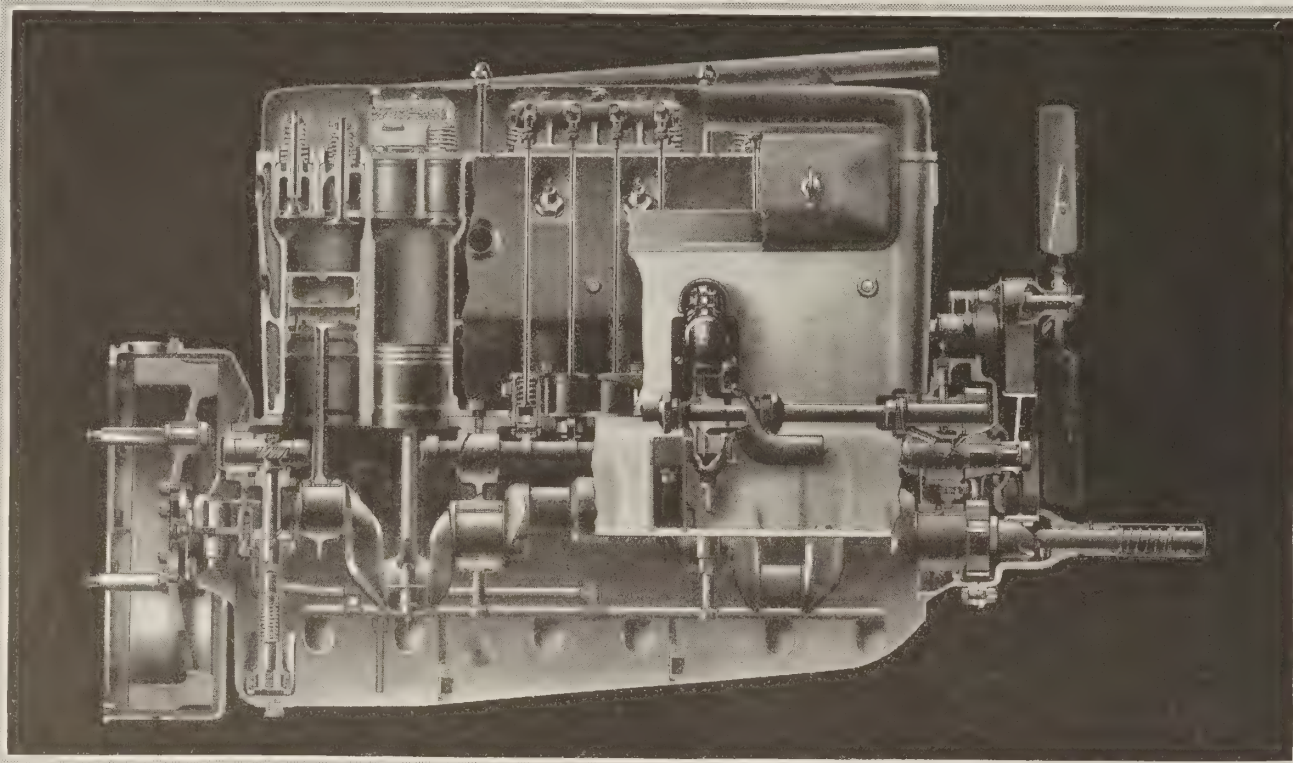
TOP—Open models, special type, clamping directly to windshield when extended. Made of special waterproof fabric. Inside operating curtains, full wing dust cover, clamp type top holders. Closed models, stationary type with door windows adjustable to any position.

WINDSHIELD—Open models, rain vision, ventilating type, slanting design giving exceptional range of vision in all directions. Adjustable friction stops to hold glass in any position. Closed models, three piece, storm proof, ventilating type.

STANDARD EQUIPMENT—Double bulb electric headlights, electric tail lamp, combination electric instrument board and trouble lamp, speedometer, motor driven electric horn, tire carrier with extra demountable rim, jack, pump, tire repair kit, complete set of tools. Orders for special jobs not accepted and no allowance will be made for any part of standard equipment omitted by customer's order.

Catalog containing complete information and prices may be obtained from any Buick dealer or direct from the factory.





The Buick Valve-in-Head Motor, Automatically Lubricated

THE Buick Valve-in-Head motor is automatically lubricated throughout. The lubrication of the main bearings, wrist pin bearings, connecting rod bearings and pistons is a combination splash and pump system, with an oil pressure gauge on the dash and a gauge on the crankcase.

The rocker arm shafts on top of the motor are fitted with oil cups, from which the oil passes into the center of the hollow shafts. These hollow shafts contain felt fibres, which are constantly saturated with oil, the outer edge of each hollow shaft being fitted with oil wicks.

Through these wicks the oil passes by capillary attraction from the fibre in the hollow shaft to the cups into which the push rods fit, lubricating them. One filling of the oil cups is sufficient for an ordinary season's driving.

The oil pump is self-thawing and so constructed that should there be any water in the oil in cold weather, causing the pump to freeze up, the self-thawing apparatus of the Buick oil pump will automatically thaw it out quickly, eliminating the possibility of injury to the pump.

A removable dust proof cover over the top of the motor keeps the entire valve mechanism always clean and free from moisture, dust and foreign matter of every description.

Surplus power and economy is the logical result of the superiority of the Valve-in-Head design, which is very easily explained. There are two principal points to be considered.

The first is that all gasoline engines are heat engines, i. e., they are operated from the heat generated as a result of the explosions, rather than by the explosions themselves. In other

words, it is the expansion of the heated gases trying to escape that furnishes the power to push the pistons downward and turn the crankshaft of the motor by means of the connecting rods, which connect the pistons with the shaft.

The second point is that the more perfectly the cylinders are cleaned out, or scavenged, of the gases generated by the previous explosions, the purer the incoming charges of gasoline will be and the more perfectly they will burn. And the more perfectly they burn, the greater the amount of heat they will develop from a given amount of gasoline and air.

In the Valve-in-Head motor the valves are located in the tops of the cylinders, right above the pistons, with the spark plugs opening right into the cylinders also. This means a small, simple, compact combustion chamber with the smallest possible water jacketed space. In the L-head and T-head motors the valves are located in pockets at the side, necessitating a complicated explosion chamber with a materially increased water jacketed space to absorb heat and power.

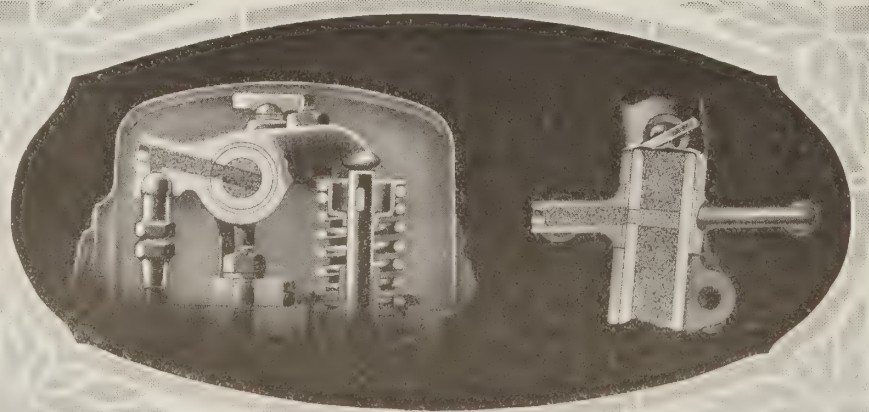
The heat generated can escape in two ways from a motor. It can be used as power by

being directed downward against the piston, or it can escape through the thin cylinder walls by absorption through the water jackets. It is impossible to use all of this heat because the motor must be kept at a certain temperature by the water in order to prevent damage to the cylinders and pistons. But it is quite obvious that the Valve-in-Head motor, because of its greatly reduced water jacketed space, will radiate a much smaller amount of the heat through the water jackets and will use the heat saved for power against the pistons which operate the crankshaft.

Then, because the valves are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through the large valves at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is much more perfect in the Buick motor because the incoming charges are purer and the electric spark has a shorter distance to travel in the brief instant of time that it must do its work in igniting the mixture. In the L-head and T-head types, the spark must not only travel across the cylinders, but across the side pockets as well, at a time when the reciprocating parts are all moving at an extremely high rate of speed.

The net result of these characteristics of design is to give the Buick Valve-in-Head motor more perfect combustion than other types of motors, a quicker ignition of the charge and a smaller loss of heat through the water jackets.

The sum of these advantages is more power and less gasoline consumption.



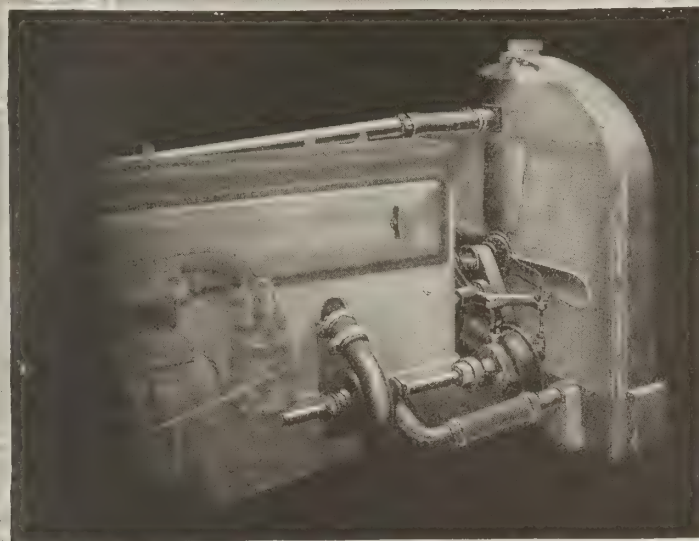
The Automatically Lubricated Rocker Arm



The Buick Cooling System

THE Buick cooling system is one of the most essential points in connection with the economical operation of the Buick Valve-in-Head motor, which boasts less water jacketed space than either the L-head or T-head types.

The cooling system on Buick cars consists of the motor water jackets, a cellular radiator of Buick design and manufacture, a fan to draw air through the radiator cells and a centrifugal pump to force the water through the system.



Buick Cooling System

When the cylinder castings are made in the Buick foundry, the greatest care is exercised to see that the cylinder walls are of uniform thickness, to insure even cooling throughout.

The radiators are made from pure copper, on account of its facility for radiating heat. Automatic machines crimp the copper strips into square cells, with a bead molded in every cell along the thinnest surface exposed to the air, which increases the effective cooling surface immensely. The core is formed by soldering these cells together.

The fans are heavily reinforced and are mounted on an adjustable fan bracket, so that the fan belt can be adjusted instantly by turning a thumbscrew.

The efficiency of the cooling system is carefully worked out in the engineering department to exactly fit it to the motor's needs. Not only are fans, pumps and radiators tested and checked by means of scientific instruments, but they receive many other tests in actual service under varying conditions.

The Dry Plate Disc Clutch

THE exclusive patented features of the Buick disc clutch minimize the effort and skill necessary in gear shifting, and at the same time provide a clutch that is absolutely smooth and positive in operation. Under this patented construction, the heavy rotating parts of the clutch are carried by the flywheel and only the very light parts are carried by the transmission, which accounts for the transmission gears not spinning after the clutch is disengaged, thus preventing the clashing of gears in shifting from one speed to another.

This clutch would have been efficient if the friction area had been reduced by half; but with its ten friction surfaces it is extremely gentle and positive in engagement and will wear for an indefinite length of time.

The clutch is formed by alternate discs, connected with the flywheel and the transmission respectively, the faces of the discs being covered with the finest quality of asbestos material.

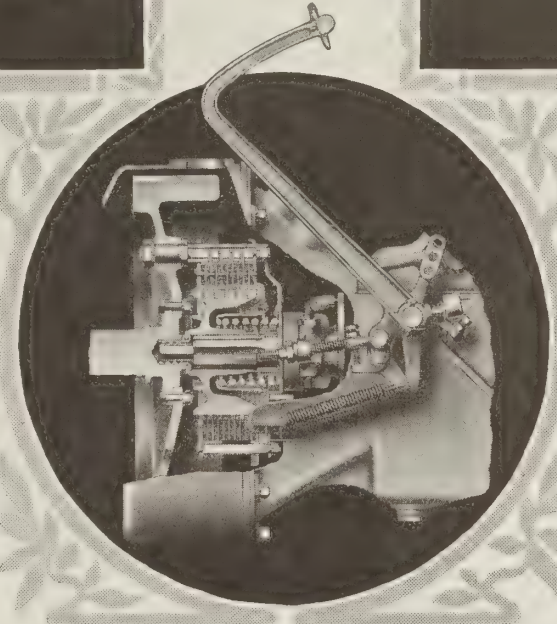
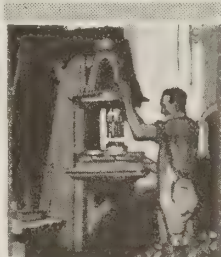
The adjustment of this clutch

is simplicity itself, being controlled by an adjusting nut on the clutch release rod.

Being a dry plate clutch, it is not necessary to put any oil in the clutch case at any time.

The only lubrication required by the Buick clutch is provided by two grease cups, which are located in a convenient place so they may be turned down occasionally as required.

The slightest pressure of the foot will disengage this smooth acting Buick clutch, which makes it especially popular with women drivers and those who drive much in congested traffic.



Buick Dry Plate Disc Clutch

The Buick Transmission

THE sliding gear type of transmission is used on Buick cars because of its strength, convenience and quietness of operation. Three forward speeds are provided, so that the motor speed with relation to the speed of the rear wheels may be instantly adjusted to meet any conditions that may be encountered, such as putting the car in motion, driving in deep sand, heavy mud, on steep grades or ordinary roads.

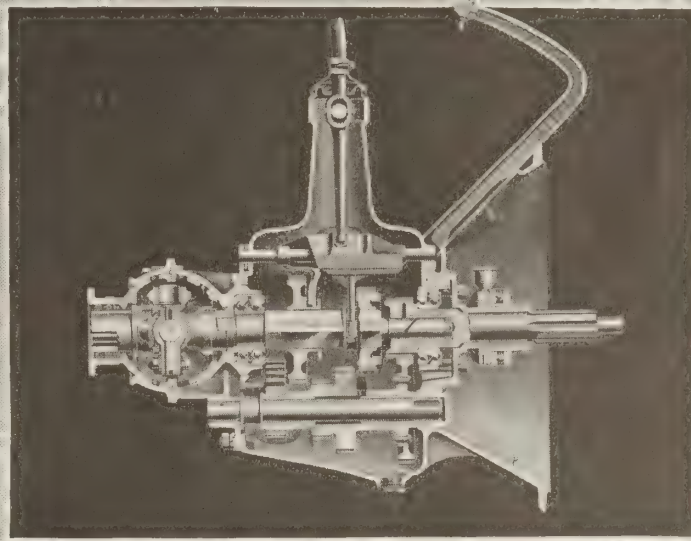
The change from one speed to another may be effected quickly and noiselessly by simply throwing out the clutch with the foot and slightly moving the lever.

This transmission has one reverse speed, with a greater reduction than any of the forward speeds, which gives the car tremendous power in reverse if the occasion should ever arise to use it. All gears run in a bath of oil,

the universal joint at the rear of the case being automatically lubricated from the same source, the oil from the transmission case entering the universal joint through the rear bearing.

Next to design, the two principal factors governing the quality and durability of a transmission are the accuracy of the machining operations and the heat treatment of the gears.

Buick gears are cut from drop forged blanks on wonderful automatic machines, the countershafts and main shafts are ground to exact



Buick Transmission

sizes to fit the gears and bearings, and the gears heat treated so that the wearing surfaces of the teeth are hard to resist wear while the inner portions are made tough to withstand sudden strains and hard pulls without breaking.

The Buick Frame

THE frame is regarded by Buick engineers as an exceedingly important unit. As its name implies, it is the framework around which the entire car is constructed and a great deal of study has been expended upon it to secure rigidity and strength without excess weight.

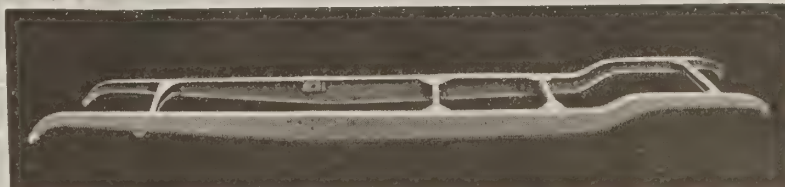
The two main side members are of heavy hydraulic pressed steel, channel section, the channels gradually widening from the front to a point slightly forward of the center, where the strain is greatest, and then tapering off gently to the rear, where there is an offset to accommodate the rear axle and give the maximum road clearance and a low-hung body.

The flanges at the top and bottom of these channels make it almost impossible to bend the frame sideways, and the extreme depth of the channels at the vital points guarantee against sagging even under extraordinary abuse.

Each side member is made of a single piece of metal, and the two are held rigidly together by four stout cross members, also of channel section pressed steel. The cross members are riveted to the side members with steel rivets, which are heated and driven firmly home with pneumatic hammers. In addition to being fastened to the tops and bottoms of the side members, they are still further reinforced by triangular steel plates, which are flanged to rest tightly against the frame.

Additional strength is given to the forward end by the motor support, which is bolted to the frame at the rear of the motor, so while there is no excess weight at any point, the frame is built to withstand shocks and strains of every description.

The entire Buick mechanism is therefore supported and held in alignment in this cradle of steel, which effectually guards against danger of weaving or distortion at any point.



Buick Hydraulic Pressed Steel Frame





The Spring Suspension

THE function of the spring suspension is two-fold.

Properly designed springs give comfort to the occupants of the car, which is their first duty, but they also add greatly to the life of the car by protecting the various mechanical parts against shocks and jars, which is no less important.

Two types of springs have been developed for Buick cars—the semi-elliptic for the front end and the cantilever type, purely Buick in design, for the rear.

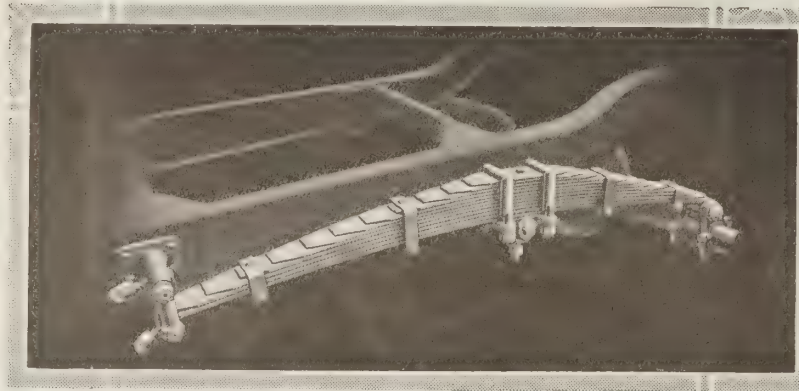
Briefly, the semi-elliptic type is used on the front of the car because it has been found to be

Another big feature of the full floating axle is its ready accessibility should repairs be necessary, as the entire rear driving apparatus can be removed in whole or in part in a few minutes and the work be done conveniently and with speed.

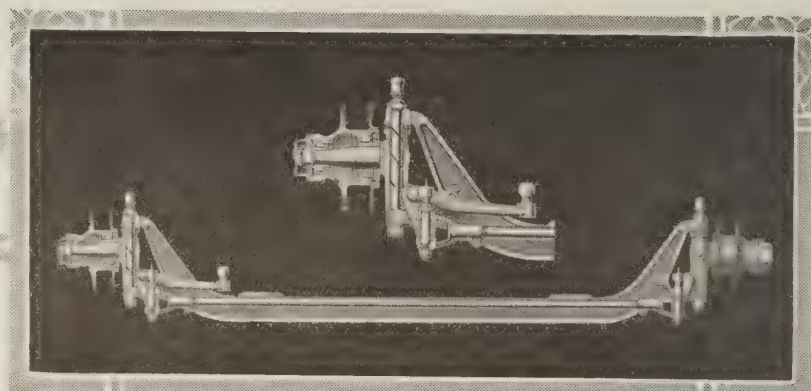
The differentials in Buick rear axles are of advanced design, made with particular reference to strength and quiet operation. The driving pinion and the large master gear are fitted with teeth of the spiral bevel type, and the whole differential is mounted on a strong carrier firmly secured to the housing. All the gears, in addition to being made to an accuracy

grotesque shapes and subject them to a downward pressure many times greater than could possibly be placed on them in service.

All raw material is carefully analyzed in the chemical laboratory before it is permitted to be put in the stock bins at the factory. The structure of the steel is made still finer and better by the heating and the ponderous blows of the drop forge hammers, which force the particles of steel closer together and make the structure uniform throughout. The steering spindles are drop forged and tested in a similar manner. The substantial hub, with its two



Special Buick Cantilever Rear Spring



Buick Drop Forged Front Axle

ideally suited to absorb the shocks peculiar to front-end work. The number, length, width and thickness of the spring leaves has been determined upon after exhaustive laboratory and road tests. This is a delicate job, because if the front springs are too flexible they will strike the bumpers on rough roads and the car will be difficult to steer. If too stiff and improperly suspended they will transmit the constantly recurring road shocks to the frame and thence to the motor itself.

The cantilever rear springs have been developed in the same scientific manner and derive their really wonderful ease of action chiefly from their design. The biggest features of Buick rear springs is the fact that they gauge their resistance according to the load or the shock, lightly oscillating over cobblestones or similar surfaces and offering a gradually increasing resistance the farther the spring is deflected from normal. A glance at the illustration will show how this power multiplies, which is directly

of half a thousandth of an inch, are given a special heat treatment.

The drive shafts are of special alloy steel, heat treated, and the housing is made of pressed steel with detachable covers, and reinforced with a truss rod.

The bearings throughout are of the best anti-friction types, both ball and tapered roller bearings being used where experience has proved most desirable.

Powerful but extremely easy acting brakes of both internal expanding and external contracting type operate on large steel brake drums very securely bolted to both rear wheels.

The Front Axle

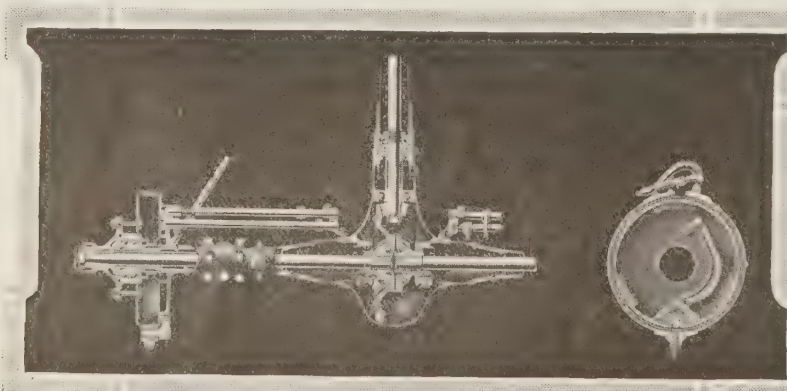
THE Buick front axle is a single piece of fine steel, forged in the Buick drop forge plant. In form it is what is termed "I-beam," like the great girders that are used in constructing modern bridges and buildings. A cross section of this axle resembles the shape of the capital I,

sets of tapered roller bearings, is firmly attached to the integral yokes by a stout kingbolt, fitted with a large grease cup conveniently located.

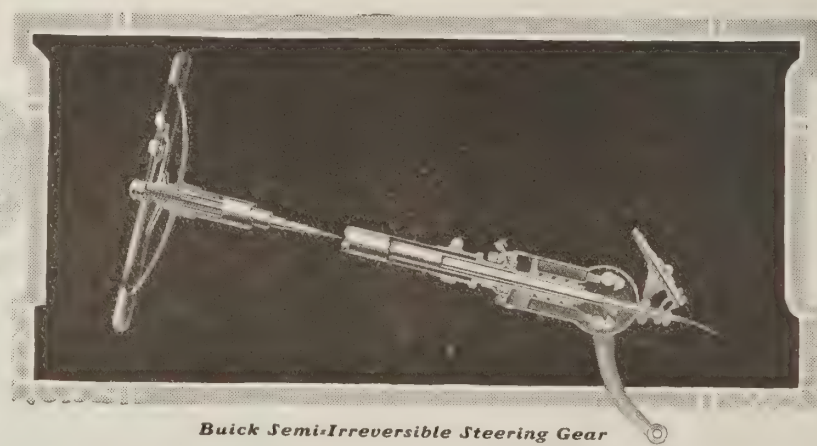
The Buick Steering Gear

THE Buick steering gear has been designed to combine the attributes of safety and ease of operation. It is of the semi-irreversible type, the principal advantages of which are entire relief from road shocks being transmitted through the steering mechanism, and ability to follow the tracks in mud or sand without wearisome maneuvering and without the danger of jumping the ruts. So while the easy handling of the Buick steering mechanism will be appreciated by city users, it will be most enthusiastically endorsed by those who travel country roads to any extent.

The big, strong steering gear housing is bolted to the left side of the car frame, and contains the principal part of the mechanism. The steering wheel is of large diameter, the



Buick Full-Floating Rear Axle



Buick Semi-Irreversible Steering Gear

opposite to the action of other types, whose resistance decreases as the load increases.

The Rear Axle

BUICK rear axles are of the full floating type, which means that the full weight of the car is supported on the sturdy axle housing, rather than on the "live" axle shafts which turn the rear wheels. This relieves the propelling mechanism from all save driving strains, which is important from the standpoints of safety to the car occupants and of undue wear on the mechanism. The torque is taken up by two stout reach rods.

but much thicker in the body, the flanges on the top and bottom adding greatly to its strength without increasing the weight to any extent.

This is the strongest type of front axle that has yet been devised, and owing to the way it is shaped it represents the lowest point in the road clearance of the Buick car. In this way, any obstruction would strike the front axle first.

It is practically impossible to break a Buick front axle, even on the testing machines in the Buick engineering laboratory. Samples are taken from each lot of axles manufactured and placed on great machines that twist them into

motion of the wheel being transmitted by means of a steel tube carrying a double threaded worm, or screw, engaging with two half nuts which slide up and down in guides in the housing, operating a steering yoke connected with an arm. The arm, in turn, operates a fore and aft rod connecting with the steering cross rod, directly behind the drop forged front axle. This connects the steering gear with both front wheels, through the medium of a series of carefully manufactured, drop forged steering connections.

As a result of this design, the factor of safety in Buick steering gears is very high.





PRESSING BUSINESS accepts no apologies nor excuses. The man who must depend upon his motor car for routine or emergency calls prides himself on his punctuality and demands absolute reliability of his car.

Buick Valve-in-Head cars possess many distinctive features that will recommend them to the serious consideration of the professional or business man, but none of these features will be more highly prized by them than the unfailing efficiency of Buick mechanical equipment.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

PIONEER BUILDERS OF VALVE-IN-HEAD MOTOR CARS
BRANCHES IN ALL PRINCIPAL CITIES -- -- DEALERS EVERYWHERE



Buick



EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK

THE motor car has revolutionized farm life. It is no longer a tedious nor irksome task to make the trips that keep the farmer and his family in touch with business and friends, because these trips now take minutes instead of hours. The farmer measures distance in a different way, now that fifteen miles has become thirty minutes' drive.

Power for hilly roads as well as level ones—stability that withstands the shocks of ruts and holes—mechanism that requires but little care from time to time—comfort and convenience at any hour of the day or night—these are the features that the Buick Valve-in-Head cars offer to the farmer, and the features that the farmer demands in his car.

BUICK MOTOR COMPANY, Flint, Michigan

Pioneer Builders of Valve-in-Head Motor Cars

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THE *Buick* BULLETIN

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Published by the Sales Department
of the Buick Motor Company

AUGUST 1918

FREE A COPY



"THE COLONEL AND THE HORSE THIEF"—By Rex Beach



But, as I was a'sayin', 'Cause I'm happier in these posies,
They ain't no style about 'em And the hollyhaws and sich,
Very gaudy or displayin', Than the hummin'-bird 't noses
But I wouldn't be without 'em- In the roses of the rich.

James Whitcomb Riley

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Number Eight



—“The crowd was swarmin’ after ’em like a nest of angry hornets, while Donnelly, with his reins between his teeth, was blazin’ away at three reds who were at Barrett’s heels—”

The Colonel and the Horse-Thief

THOSE marks on my arm? Oh! I got ’em playing horse-thief. Yes, playin’. I wasn’t a real one, you know—Well, I s’pose it was sort of a queer game. Came near bein’ my last, too, and if Black Hawk hadn’t been the best horse in Texas the old Colonel would’ve killed me sure.

That was way back in the sixties, when I was as wild a lad as ever straddled a pony.

You see five of us had gone over into the Crow Nation to race horses with the Indians.

You know how an Indian loves to run horses? Well, the Crows had a good deal of money then, and our scheme was to go over there, get up a big race, back our horses with all we had, and take down the wealth.

You see, as soon as the money was up and the horses started, every Indian would be watchin’ the race and yellin’ at the nags, then, in the confusion, our boys was to grab the whole pot, Indians’ money and ours too, and we’d make our get away across the river back into Texas.

We figured that we could get a few minutes start of ’em, and, with the horses we had under us, there wasn’t much danger of their gettin’ in range before we crossed back to where they couldn’t follow us.

Well, sir! I never see anything work out like that scheme did. Them Crows was dead anxious to run their ponies and seemed skeered that we wouldn’t let ’em get all their money up.

As we was eatin’ supper the night before the race, Donnelly says: “Boys, I’m sore that we didn’t have more coin. If we’d worked ’em right they’d a’ give us odds. We could ’a’ got five to three anyhow, and maybe more.”

They’d ribbed it up for me to ride Martin’s mare, Black Hawk, while a little feller named Hollis rode his own horse.

Donnelly’s part was to stay in the saddle and keep the other horses close to Barrett and Martin. They was to stick next to the money, and one of ’em do the bearin’ off of the booty while the other made the protection play.

We rode out from camp the next mornin’ to where we’d staked out a mile track on the

By REX BEACH

Illustrated by H. L. Timming

prairie and it seemed as if the whole Crow Nation was there, and nary a white but us five.

They’d entered two pretty good-lookin’ horses and had their jockeys stripped down to breech-clouts, while Hollis and me wore our whole outfits on our backs, as we didn’t exactly figger on dressin’ after the race, leastways, not on that side of the river.

Just before we lined up, Jim says: “Now you—all ride like—, and when you git to the far turn we’ll let the guns loose and stampede the crowd. Then jest leave the track and make a break fer the river, everybody for himself. We’ll all meet at them cottonwoods on the other side, so we can stand ’em off if they try to swim across after us.”

That would have been a sure enough hot race if we had run it out, for we all four got as pretty a start as I ever see and went down the line all together with a-bangin’ of hoofs and Indian yells ringin’ in our ears.

I had begun to work Black Hawk out of the bunch to get a clear start across the prairie at the turn, when I heard the guns begin snappin’ like pop-corn.

“They’ve started a’ready,” yelled Hollis, and we turned the rearin’ horses toward the river, three miles away, leavin’ them two savages tearin’ down the track like mad.

I glanced back as I turned, but, instead of seein’ the boys in the midst of a decent retreat, the crowd was swarmin’ after ’em like a nest of angry hornets, while Donnelly, with his reins between his teeth, was blazin’ away at three reds who were at Barrett’s heels as he ran for his horse. Martin was lashin’ his jumpin’ cayuse away from the mob which sputtered and spit angry shots after him. Bucks were runnin’ here and there and hastily mountin’ their ponies—while an angry roar came to me, punctuated by the poppin’ of the guns.

Hollis and I reached the river and swam it half a mile ahead of the others and their yellin’ bunch of trailers, so we were able to protect ’em in their crossin’.

I could see from their actions that Bennett and Martin was both hurt and I judged the deal hadn’t panned out exactly according to specifications.

The Crows didn’t attempt to cross in the teeth of our fire, however, being satisfied with what they’d done, and the horses safely brought our three comrades drippin’ up the bank to where we lay takin’ pot-shots at every bunch of feathers that approached the opposite bank.

We got Barrett’s arm into a sling, and, as Martin’s hurt wasn’t serious, we lost no time in gettin’ away.

“They simply beat us to it,” complained Barrett, as we rode south. “You all had jest started when young Long Hair grabs the sack and ducks through the crowd, and the whole bunch turns loose on us at once. We wasn’t expectin’ anything so early in the game, and they winged me the first clatter.”

“They got me, too, before I saw what was up,” added Martin; “but I tore out of there like a jack-rabbit. It was all done so cussed quick that the first thing I knew I’d straddled my horse and was makin’ tracks. Who’d a thought them durned Indians was dishonest enough fer a trick like that?”

Then Donnelly spoke up and says: “Boys, as fur as the coin goes, we’re out an injured; we jest made a ‘Mexican-stand-off’—lost our money, but saved our lives—and mighty lucky at that, from appearances. What I want to know now is, how we’re all goin’ to get home, clean across the State of Texas, without a dollar in the outfit, and no assets but our guns and the nags.”

“We’ve got to eat, and so’s the horses,” says Hollis, “but no rancher is goin’ to welcome with open arms as disreputable an outfit as we are. Two men shot up, and the rest without beddin’, grub, money, or explanations. Them’s what we need—explanations. I don’t exactly see how we’re goin’ to explain our fix to the honest hay-diggers, either. Everybody’ll think some sheriff is after us, and two to one they’ll put some officer on our trail, and we’ll have more trouble. I believe I’ve had all I want for a while.”

"I'll tell you how we'll work it," I says. "One of us'll be the sheriff of Guadalupe County, back home, with three deputies, bringin' back a prisoner that we've chased across the state. We'll ride up to a ranch an' demand lodgin' for ourselves and prisoner in the name of the State of Texas and say that we'll pay with vouchers on the county in the morning."

"Your plan's all right, kid," says Bennett to me. "You be the terrible desperado that I'm bringin' home after a bloody fight, where you wounded Martin and me, and 'most escaped. You'll have ev'ry rancher's wife givin' you flowers and weepin' over your youth and kissin' you good bye. In the mornin', when we're ready to go and I'm about to fix up the vouchers for our host, you break away and ride like the devil. We'll all tear off a few shots and foller in a hurry, leavin' the farmer hopin' that the villain is recaptured and the girls tearfully prayin' that the gallant and misguided youth escapes."

It seemed to be about our only resort, as the country was full of bad men, and we were liable to get turned down cold if we didn't have some story, so we decided to try it on.

We rode up to a ranch 'bout dark, that night, me between the others, with my hands tied behind me, and Jim called the owner out.

"I want a night's lodgin' fer my deputies and prisoner," he says. "I'm the sheriff of Guadalupe County, and I'll fix up the bill in the mornin'."

"Come in! Come in!" the feller says, callin' a man for the horses. "Glad to accommodate you. Who's your prisoner?"

"That's Texas Charlie that robbed the Bank of Euclid single-handed," answers Jim. "He give us a long run clean across the State, but we got him jest as he was gettin' over into the Indian Territory. Fought like a tiger."

It worked fine. The feller, whose name was Morgan, give us a good layout for the night and a bully breakfast next morning.

That desperado game was simply great. The other fellers attended to the horses, and I just sat around lookin' vicious, and had my grub brought to me, while the women acted sorrowful and fed me pie and watermelon pickles.

When we was ready to leave next morning, Jim says: "Now, Mr. Morgan, I'll fix up them vouchers with you," and givin' me the wink, I let out a yell, and jabbin' the spurs into Black Hawk, we cleared the fence and was off like a puff of dust, with the rest of 'em shootin' and screamin' after me like mad.

Say! It was lovely—and when the boys overtook me, out of sight of the house, Morgan would have been astonished to see the sheriff, his posse, and the terrible desperado doubled up in their saddles laughin' fit to bust.

Well, sir! We never had a hitch in the proceedings for five days, and I was gettin' to feel a sort of pride in my record as a bank-robber, forger, horse-thief, and murderer, accordin' to the way Bennett presented it. He certainly was the boss liar of the range.

He had a story framed up that painted me as the bloodiest young tough the Lone Star had ever produced, and it never failed to get me all the attention there was in the house.

One night we came to the best lookin' place we'd seen, and, in answer to Jim's summons, out walked an old man, followed by two of the prettiest girls I ever saw.

"Glad to be of assistance to you, Mr. Sheriff," he said. "My name is Purdy, sir! Colonel Purdy, as you may have heard. In the Mexican War, special mention three times for distinguished conduct. These are my daughters, sir! Annabel and Marie." As we went in, he continued: "You say you had a hard time gettin' your prisoner? He looks young for a criminal. What's he wanted for?"



"The old man had a nigger move my chair up to the foot of the table and bring me a plate of coarse grub after they all finished eatin'. Jim and the boys would all grin like idiots and invent a new crime for me."

Somehow, when I saw those girls blushin' and bowin' behind their father, I didn't care to have my crimes made out any blacker'n necessary and I tried to give Jim the high-sign to let me off easy—just make it forgery or arson—but he was lookin' at the ladies, and evidently believin' in the strength of a good impression, he said: "Well, yes! He's young but they never was a old man with half his crimes. He's wanted for a good many things in different places, but I went after him for horse-stealin' and murder. Killed a rancher and his little daughter, then set fire to the house and ran off a bunch o' stock."

"Come to observe him closely, he has a depraved face," says he. "He looks the thorough criminal in every feature, dead to every decent impulse, I s'pose."

"Yes, and he's desperate, too. One of the worst I ever see. We had an awful fight with him up here on the line of the Territory. He shot Martin and me before we got him. Ye see, I wanted to take him alive, and so I took chances on gettin' hurt."

The old man insisted on havin' my feet bound together and me fastened to a chair, and said: "Yes, yes, I know you can watch him, but you're in my house now, and I feel a share of the responsibility upon me. I've had experience with desperate characters and I'm going to be sure that this young reprobate don't escape his just punishment."

At supper, Jim with his arm in a new sling, sat between the two girls who cooed over him and took turns feedin' him till it made me sick.

The old man had a nigger move my chair up to the foot of the table and bring me a plate of coarse grub after they all finished eatin'.

I ate everything I could reach, which wasn't much, and when I asked for the butter he glared at me and said: "Butter's too good for horse-thieves; eat what's before you."

Every time I'd catch the eye of one of the girls and kind of grin and look enticin' she'd shiver and tell Jim that the marks of my depravity stood out on my face like warts on a toad.

Jim and the boys would all grin like idiots and invent a new crime for me. On the square, if I'd worked nights from the age of three I couldn't have done half they blamed me for.

They put it to the old man so strong that when he turned in he chained me to Sam, the cross-eyed nigger that stood behind me at supper, and made us sleep on the floor.

I told Sam that I cut a man's throat once because he snored, and that nigger never closed an eye all night.

After breakfast, when it came time to leave, Donnelly untied my feet and led me out into the yard, where the girls were hangin' around the Colonel and Jim, who was preparin' to settle up.

As we rode up the evening before, I had noticed that we turned in from the road through a lane, and that the fence was too high to jump, so, when I threw my leg over Black Hawk, I hit Donnelly a swat in the neck, and, as he did a stage-fall, I swept through the gate and down the lane.

The old man cut the halter off one of his Mexican war-whoops, and broke through the house

on the run, appearin' at the front door with his shot-gun just as I checked up to make the turn onto the main road.

As I swung around, doubled over the horse's neck, he let drive with his old blunderbuss, and I caught two buckshot in my right arm where you see them marks.

I heard him howl, "Come on, boys! We'll get him yet," and over my shoulder, I saw him jump one of his loose horses standin' in the yard and come tearin' down the lane, ahead of the befuddled sheriff and posse, his white hair streamin' and the shot-gun wavin' aloft, as though chargin' an army of greasers at the head of a regiment.

He certainly kept good horses, too, for in five minutes we'd left the posse behind, and I saw him madly urgin' his horse into range, reloadin' as he came.

As I threw the quirt into the mare with my good arm, I allowed I'd had about all the horse-stealin' I wanted for a while.

The old devil finally saw he was losin' ground in spite of his best efforts, and let me have both barrels. I heard the shot patter on the hard road behind me, and hoped he'd quit and go home, but I'm blamed if he didn't chase me five miles further before turnin' back, in hopes I'd cast a shoe or something would happen to me.

I believe I was on the only horse in Texas that could have outrun the Colonel and his that mornin'.

About noon I stopped at a blacksmith's shop, half dead with pain, and had my arm dressed.

As the posse rode up to me, sittin' in the sun by the lathered flanks of my horse and nursin' my arm, Jim yells out: "Here he is! Surround him, boys! You're our prisoner!"

"No! I'm blamed if I am," I says. "You'll have to get another desperado. After this, I'm the sheriff!"

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

THERE are six Buick six-cylinder models for the nineteen-nineteen season, including three open and three closed types. Fundamentally, these cars embrace the same broad engineering principles as their predecessors, to which have been added a number of improvements as a result of the past year's experience and research.

Some of these improvements are quite simple, such as rearranging the position of grease cups to make them more accessible, while others alter certain minor features of the chassis design in order to secure the desired result. The object of the changes in all cases is to add to the convenience and long life of the cars.

Improvements have been made in the Valve-in-Head motor, chief of which is the automatic lubrication of the valve mechanism properly protected from dust and cutting sand. This means that the valve mechanism requires attention only once or twice in a season and long life insured to all the working parts.

The oil circulating pump has been so improved that it can be successfully operated in the most severe climates. A positive oil level gauge of new type has been placed on the crankcase and a dash pressure gauge informs the driver at all times in reference to the proper lubrication of the motor. The front breather tube has been changed to an extension combination oil filler and breather with screen, making it easy to fill the crankcase without the aid of a funnel, which will be appreciated by every owner.

Further Improvements

IN this manner, the entire chassis has been gone over and improvements have been made in the clutch, transmission, rear axle, springs, steering gear and so on, even down to the muffler.

For example, the rear springs are of the improved cantilever type, but have been lengthened, with the result that the body has been lowered 1¼ inches and still better riding qualities obtained without changing the type of spring suspension.

The purchaser of a nineteen-nineteen Buick car will perhaps not delve into the why and the wherefore of these various changes. He will, at any event, be conscious of them when operating or caring for his car. He will appreciate the added convenience that is his each time he purchases a new Buick car, and its growth in longevity and accessibility from year to year.

The open models all have new tops of attractive design and substantial material, with plate glass windows in the back curtains, held firmly in place by nickel plated frames. The flat side

curtain pockets are located overhead between the bows, giving more head room and a much neater appearance. The side curtains themselves have large celluloid windows and are all properly marked to assist the driver in placing them in position quickly. Instead of being rolled up, the curtains lie flat in the curtain pockets when not in use.

The bodies have been improved in many ways, including new type instrument board and fittings, door hinges, upholstery springs and seat cushions.

The Closed Models

THE closed bodies have been improved also. The Model H-Six-46 Coupe has full frame doors with patented mechanical devices by which the plate glass door windows are raised and lowered, combination hinges and door stops and a waterproof baggage compartment beneath the rear deck.

The same new type of doors, patented window raisers and combination hinges are used on the Model H-Six-47 and H-Six-50 Sedans, as well as the new bumpers and dovetails. The front seats are full width, and properly designed to give more convenient entrance and exit to and from the rear compartment. Improved auxiliary seats have been designed for the extra passengers in the Model H-Six-50 Sedan, permitting the occupants to face forward, also affording a great deal more comfort than is usual in seats of this type. The interiors of these closed bodies maintain the same high standard set by the previous Buick closed models, plus the advantages secured by the body changes described.

In reviewing the various improvements, it will be noted that each and every one of them has a purpose that fits in exactly with the spirit behind the modern motor car.

The Importance of Details

IT is quite obvious, that the more dependable the motor car becomes and the less of the owner's attention it requires while in service, the greater will be its value as a business asset.

This is just as true of so simple a matter as adjusting the side curtains or raising the windows of a closed car as it is of the more important operations of starting, lubricating, etc., although in a somewhat lesser degree. If the lubrication of the motor is not practically automatic throughout, the driver will frequently fail to give it the proper attention, when it will prove inefficient and unreliable, resulting in his car being in the repair shop for several days when he needs it most.

Time is time, and it has an intrinsic value everywhere—on the road, in the garage or in the repair shop. The busier a man becomes, the more essential his car is to him, because there is

no substitute for a good, reliable motor car as a means of saving time.

So the discussion of each and every part of the car, even down to the little details, has a great deal of interest and meaning to the discriminating buyer, and it is for this reason that some of the minor changes in Buick nineteen-nineteen cars have been covered here. As the old saying goes, "Trifles make perfection, but perfection is no trifle."

There is a branch of the engineering staff at the Buick Motor Company whose sole duty it is to attend to what might be termed "trifles." Their influence reaches out to every department in the Buick factory and to every part in the Buick car, and concerns not only the design of the parts themselves but the materials and methods used in building them. Sometimes a slight change in one or another of these features will effect a marked improvement in a certain part, and such changes are worked out as painstakingly by these men as are the more fundamental features handled by the chief engineer and his assistants. When they have established the desirability of such improvements to their own satisfaction, they make their recommendations to the proper heads of departments where they are finally passed on.

Logically Developed

THE big underlying principles of design were settled upon by Buick designers nearly twenty years ago, and consistently throughout the intervening space of time their effort has been to build around these principles constructively, to make Buick cars more serviceable in the saving of time, in convenience of operation and in general efficiency.

The Buick cars for nineteen-nineteen are conspicuous for their power and performance, as Buick cars have been for many years. They are economical, not merely in their consumption of gasoline and oil, but in everything else that enters into upkeep cost. They are thoroughly dependable, every unit being built according to principles that have been thoroughly proven in every conceivable kind of service. They are easy to operate under all conditions, giving the most satisfactory results with the minimum amount of effort. Their development in the details that go to make up complete motoring satisfaction is nothing short of remarkable, and gives them no small share of their utility for business purposes.

It is not the Buick policy to attempt anything radical, and in this sense the nineteen-nineteen cars are not new models. At the same time, they logically follow the Buick idea of progressive development and in consequence are the most efficient and satisfactory cars ever marketed by this Company.

Buick Aluminum, Brass and Bronze Foundry

THE conditions for making high grade aluminum, brass and bronze castings are somewhat different from those encountered in casting iron and semi-steel, and for this reason the Buick Motor Company has built an entirely separate foundry, suitably equipped for this class of work.

The aluminum, brass and bronze foundry is naturally somewhat smaller than the other building, but compares favorably with it in point of convenience and efficiency.

The raw material is handled at the rear of the building, but instead of preparing the metal on the spot, it is purchased according to the engineering department's specifications and thoroughly tested in the metallurgical and chemical laboratories before going into the stock bins. For example, in order to secure aluminum castings with the right degree of strength as well as lightness, it is essential that the raw material contain an accurate percentage of pure copper, so each shipment of aluminum is carefully analyzed on arrival to see that it is up to specifications. The same rule applies to brass and bronze, which are used in making bushings and other parts.

Outside the stock room doors is a line of electric furnaces, which are used in this work on account of their perfect control and their freedom from gases and fumes which might affect the quality of the finished castings. The current which generates the heat is supplied with great regularity through a series of switches, and electric pyrometers tell the operators accurately when the metal is the right temperature to pour.

This is important because it must be heated to a certain degree before it will flow properly, and if it is heated too much it is liable to injury.

Each of these furnaces has a steady output of fifteen hundred pounds of pouring metal every two hours, and this output may be increased when occasion demands. At the side of the furnace is an ingenious tilting device, consisting of a series of cog wheels and levers, by means of which one man can easily pour off the contents of the furnace to supply the molders.

WHILE the metal is being melted, the cores are prepared. A special grade of sand is required for core making, as the cores are used to make holes or hollow spaces in the interior of

the finished castings and must be removed when the casting has cooled. Therefore, the core sand must be held together by some substance, known as core compound, which bakes hard at low temperatures and disintegrates at the high temperature of the melted metal. Thus when the core is placed in the mold after baking in the core ovens, it is firm and retains the shape of the hole or hollow space required until the wall of metal has hardened sufficiently. By this time the core compound has turned to ashes and vapor, the vapor escaping through vents provided. A sharp blow will then suffice to shake the core to pieces and the core sand is shaken out through the holes.

The first operation in core making, then, is to screen the sand and the next to mix it with the

covered by a traveling crane. The operator of this electric crane sets the pace for the entire department.

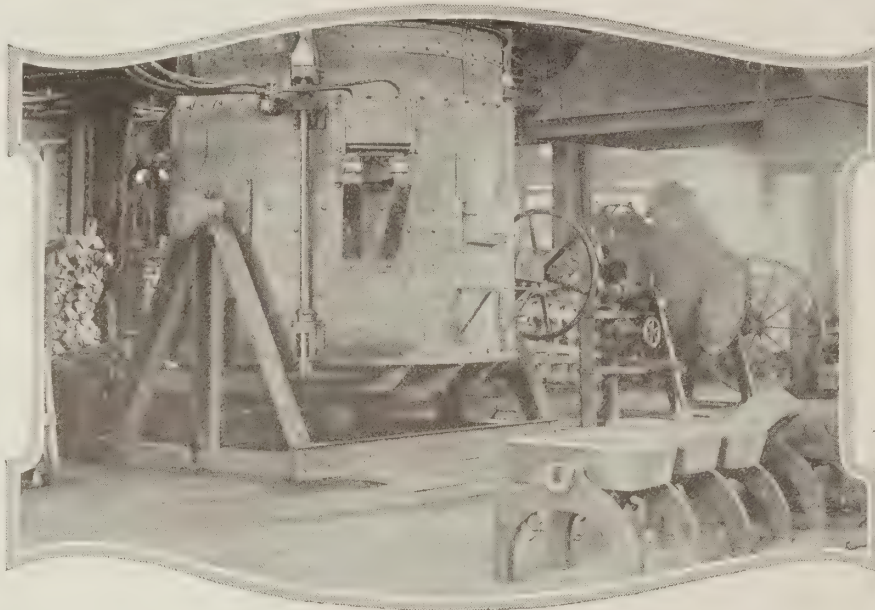
At either end of the track are the molders, the pouring being done in the center, directly behind the row of electric furnaces. The crane operator goes first to the sand pile, lifts a supply of molding sand with his grab bucket and deposits it beside the molders. Ready to the molders' hands are the wooden frames in which the molds are made. These frames are made in two sections, with detachable bottoms. The molders stand before automatic molding machines, which are operated by means of levers.

The platform of the molding machine carries the metal pattern, around which the workmen place the molding frame and then put in the facing sand. The facing sand is unusually fine, to give the exterior of the casting a smooth surface, and is followed by the molding sand until the frame is filled, when the automatic shaker is set in operation and forces the sand into every nook and corner of the frame and closely about the pattern. More sand is added and shaken down until the frame is filled, when it is leveled off and the bottom board placed over it. Then the hinged platform of the machine is turned over by the compressed air, leaving the lower half of the mold right side up, the metal pattern loosened by a compressed air vibrator and lifted out, when the mold is lifted by the electric crane and carried to the proper place on the molding floor.

The electric crane then proceeds to the other end of the line, where the top half of the mold has been prepared in a similar manner. Lifting the top half carefully, the crane returns to the molding floor and by the time it arrives the cores have been placed in position, when the top half is carefully lowered and fastened in place.

The mold is now complete. Pots of molten metal are waiting for it and the pouring is done. The molds remain in position until the metal has cooled, when hooks from the crane are fastened to the casting, if it is a big one, and the casting whisked to the far end of the room and placed on a conveyer of the endless belt type, which elevates it to the cleaning floor above.

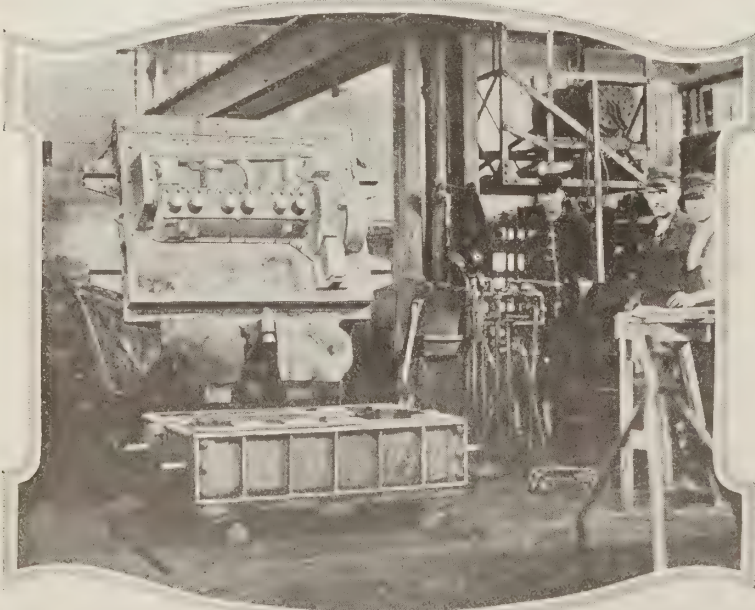
The crane then returns to the mold, the sides of the mold are removed and the bottom, con-



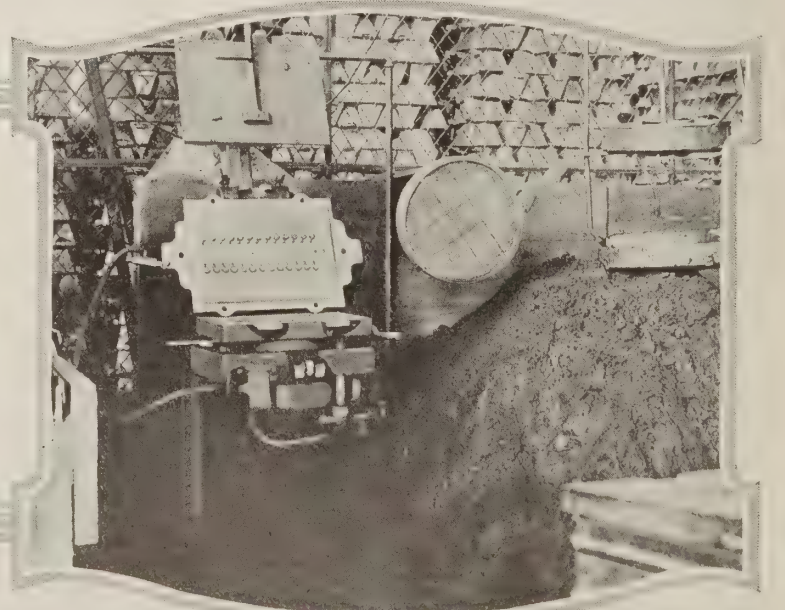
Each of these electric furnaces has a steady output of fifteen hundred pounds of pouring metal every two hours. The heat is generated entirely by electricity, which makes it easy to control and free from gases and fumes. The temperature at which the metal is poured is of first importance, and is controlled by electric pyrometers. One man can draw off the metal with the aid of the patented tilting device.

right amount of core compound. The mixture is then taken to the core making benches, where it is carefully molded to the required shape by the core makers, inspected and placed on racks. In this condition the cores are quite fragile and they are wheeled with care to the core baking ovens where they are baked at low temperature for several hours until they are hard. After being again inspected for defects they are delivered as required to the molders to be incorporated in the molds.

The next point of interest is the arrangement of the molding and pouring floor. This department is long and fairly narrow and is entirely



This great molding machine is used for making molds for the larger Buick castings, such as crankcases. It is here shown with a crankcase pattern installed. The entire machine is operated by compressed air, including the handling of the metal pattern, shaking down the sand and turning over the mold when finished. The other half of the mold is prepared at the other end of the floor and brought down by the electric crane.

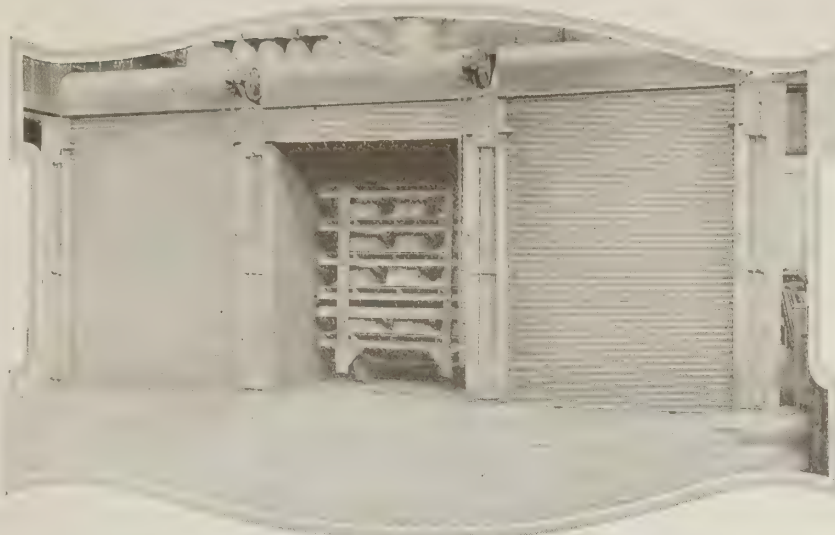


The smaller molds for brass and bronze castings are prepared on this squeezing machine. Like the larger machine, it is operated entirely by compressed air, the sand being pressed into place instead of shaken down. It will be noted from the pattern shown that a number of smaller parts are molded and cast simultaneously. A compressed air vibrator loosens the pattern so it can be removed without disturbing the sand.

taining the molding sand, is lifted by means of hooks and carried by the crane to the sand pile, where it is emptied and "tempered" for use again.

REVIEWING the operations in this department, it will be noted that laborious hand work and heavy lifting are entirely eliminated, the only time the material is handled by the men being when the molds are filled with sand and when the metal is poured. This not only makes for satisfied workmen but enables the operations to be performed in the quickest and most efficient manner. The crane travels about with great speed, is always on time and handles its heavy loads with ease.

The smaller molds are prepared just off this big department, convenient to the pouring floor. These molds are made in much the same way, but with the aid of a squeezing machine to force the sand in place. These squeezing machines are operated by compressed air, and like the larger automatic molding machines, are equipped with compressed air vibrators to loosen the metal patterns so they can be removed without disturbing the molding sand. The cores are then put in



An essential part of nearly every mold is the core. Cores make it possible to leave holes or hollow places in metal castings, as they are made of sand mixed with a compound that bakes hard at low temperatures and burns up at the temperature of the molten metal. So after the cores are carefully molded, they are placed on racks like the one here shown and baked until hard enough to serve their purpose

saws that saw off the "gates." These gates are solid pieces of metal formed by the holes in the molds through which the molten metal is poured, and these holes are always filled completely to insure that sufficient metal has been put in the molds to entirely fill them.

surfaces down in order to give them the required smoothness and finish.

The castings are now ready for the final inspection, which consists of a critical comparison with the engineering department blue prints and checking with a series of specially designed instruments and gauges. In the case of such castings as crankcases or others that contain oils or other liquids, this inspection also includes a test for sand holes or other leaks. This test is performed with a solution of gasoline and Prussian blue, and on account of the penetrating power of gasoline it carries the Prussian blue into every minute pore of the casting. If there should be a leak, no matter how small, it can be detected after the solution has remained in the casting for a short time by a blue stain on the outside of the casting where the mixture is seeping through.

THE inspection throughout the entire foundry is of the same painstaking character. The different kinds of sand are inspected before being taken to the molding and core making departments. The temperature of the metal is checked before the pouring is done to guard



Here is the pacemaker for the Buick molding floor, in his electric monorail crane. Everybody has to keep up with him, yet he makes it possible for them to do so. He brings the molding sand to the machines, brings the two halves of the molds together, carries the molds to the pouring floor, removes the castings to the conveyer and returns the mold frames to the workmen. The picture shows a finished mold in transit



When the big castings are hard, they are placed on this endless-chain type conveyer which takes them to the cleaning floor above. The mechanical conveyer system is followed out completely in the Buick foundries, and after the castings are thoroughly cleaned they are placed in chutes which take them by gravity to the floor below for the final operations. Needless handling is thus done away with

and the two halves placed together, as in the case of the larger molds.

The conveyer that takes the castings to the cleaning room brings them up with the cores still inside and places them on the floor, where they are passed along to the cleaners. These men are equipped with pneumatic hammers, which strike sharp, repeated blows on the sides of the castings and cause the cores to fall to pieces. The larger cores are held together by wires bent to the proper shape, and when the core sand is shaken out it is mixed with a certain amount of these wires. On the cleaning floor is a chute into which the core sand is put. This chute opens into a machine which breaks the sand up still further and passes it over magnetic rollers to which the wires adhere. The wires are then dropped automatically into receivers on the floor below, while the core sand is diverted in to the tempering department to be screened for use again.

Any rough places that may be found on the castings are now removed by the chippers, who are armed with pneumatic cold chisels. This work is necessarily done rather roughly, and when finished is gone over by the filers and scrapers, who smooth it down and pass the castings along to the grinders.

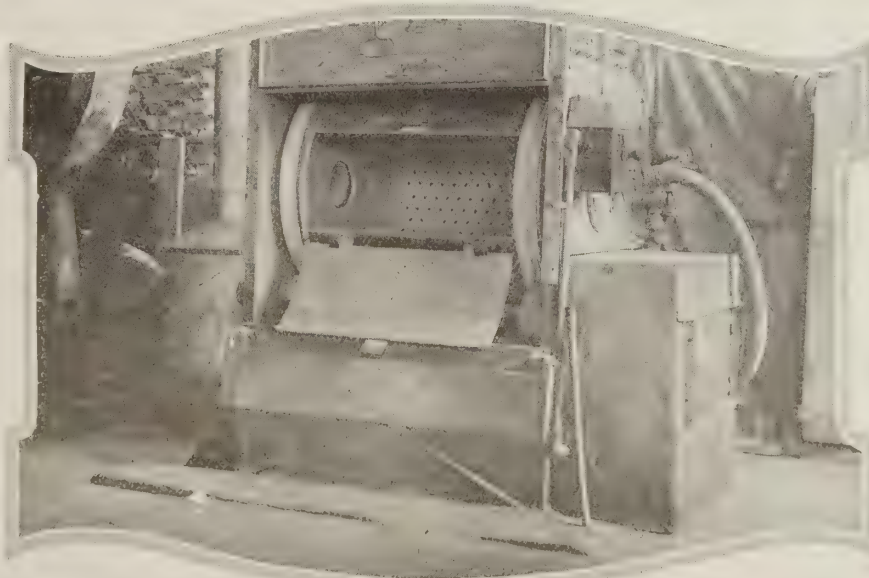
The grinders operate large emery wheels, and with them go over the castings and grind the

against defective castings from that source. The cores are inspected before and after baking, to see that they are the right size and hardness and are not chipped or damaged in any way.

The final inspection is a sort of resume of all the previous inspections, and is in turn followed by an inspection when the castings are finally delivered to the machining departments.

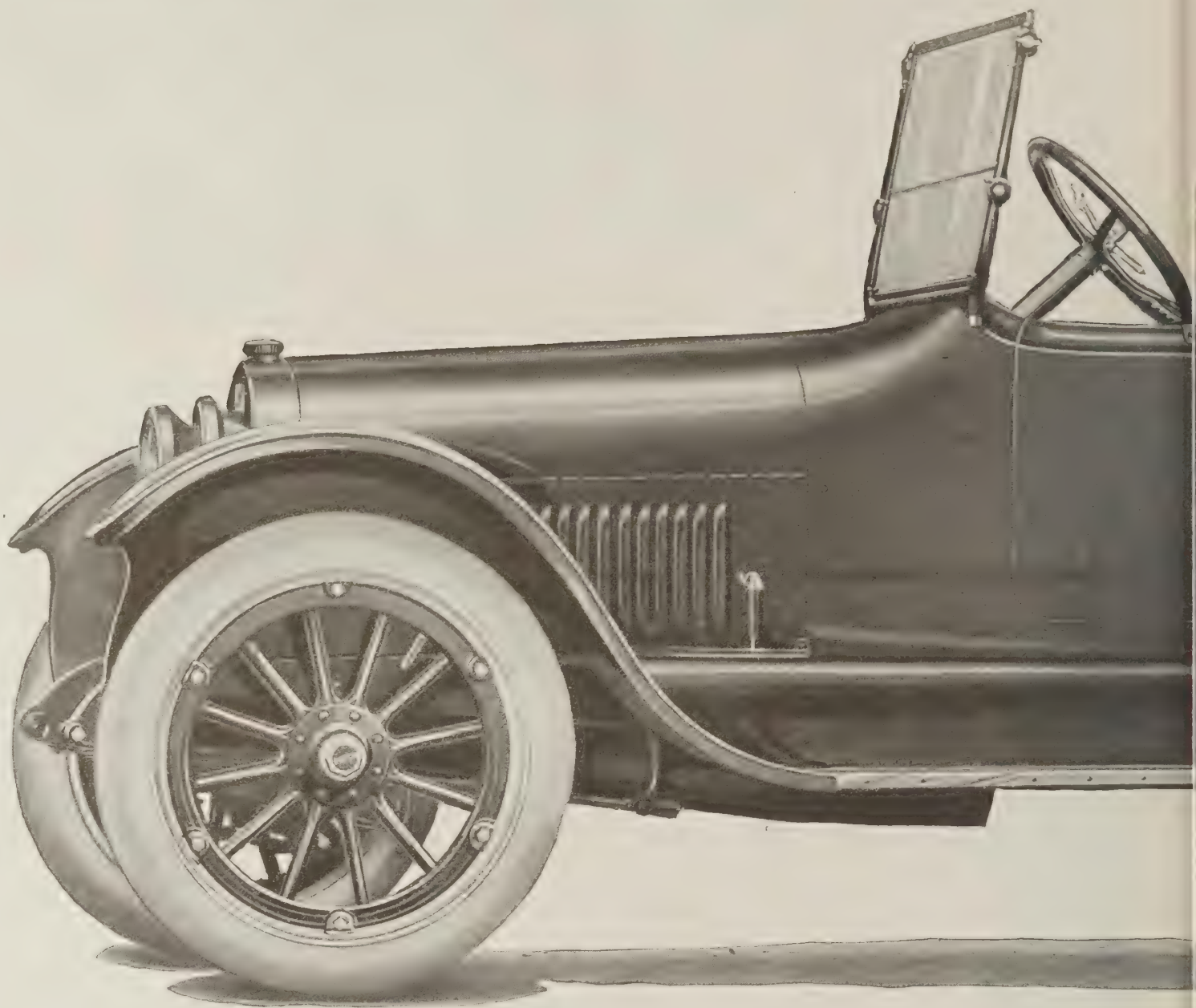
Final inspection over, the castings are sent to the shipping room and from there to the shipping platform. When enough castings of any one kind have accumulated, they are put in freight cars and taken to the proper manufacturing departments to be used in the manufacture of units for Buick cars.

It should be remembered that castings form the basis for a very considerable amount of the finer work that enters into the makeup of a motor car, and viewed in this light the making of suitable castings is just as important as any other step in automobile building. This is one reason that the Buick Motor Company operates its own foundries, where every stage of the foundry work is under the control of the engineering and manufacturing heads.



Some of the smaller bronze castings are placed in this rotary sand blasting machine to give the surfaces a smoother finish. The sand is blown in by compressed air and as the cylinder rotates the excess sand drops out through the small holes.

THE exteriors and interiors of the castings are now entirely free from sand, and arriving at the other end of the cleaning floor they are sorted out and put into chutes leading to the first floor again. Here they are put on band



The Buick Valve-in-Head



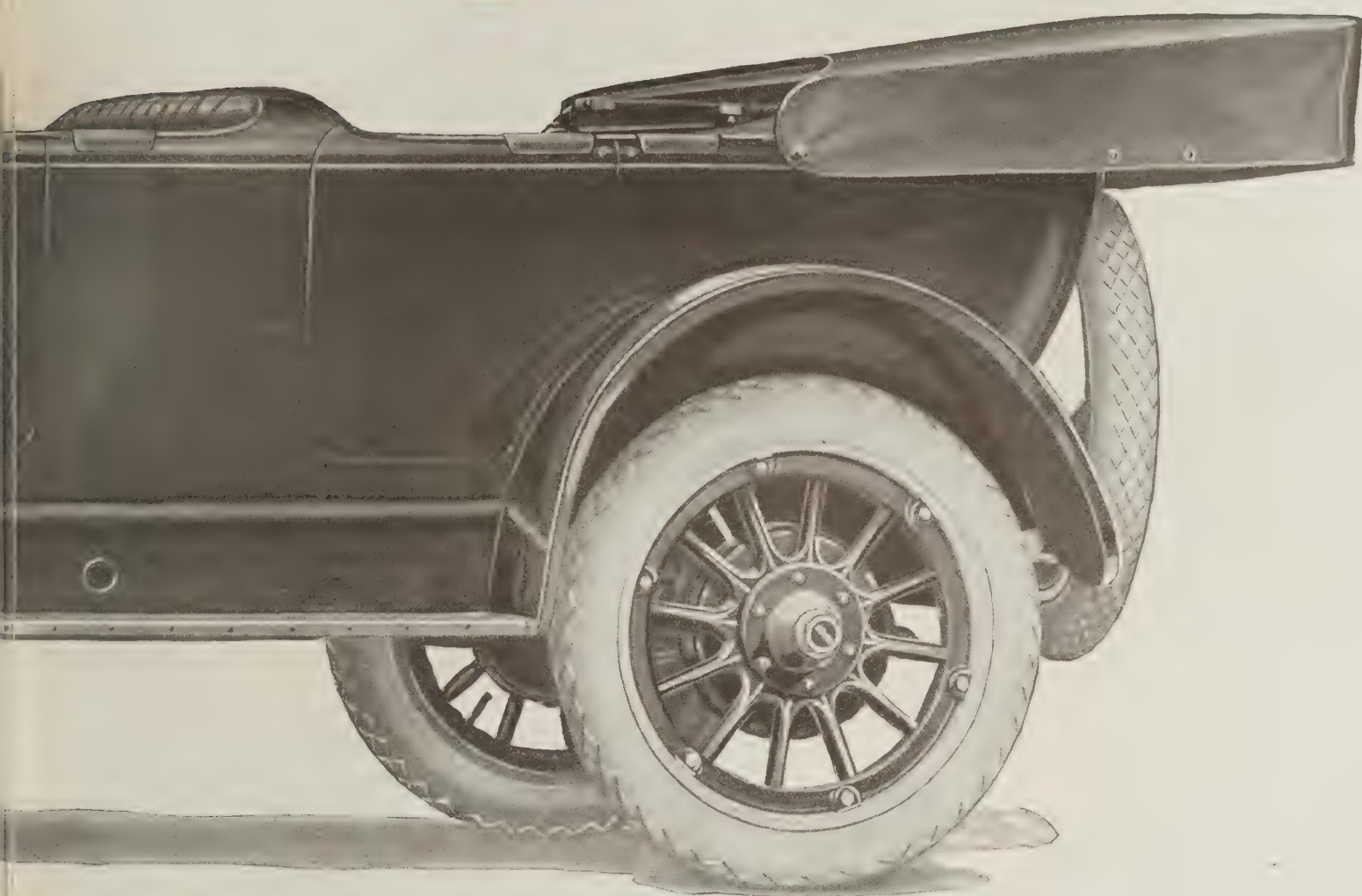
BUICK Valve-in-Head work is not a mere collection of features give t

Rome was not built in a day. The product of nearly every part, from the smallest fittings. No part is

The various units of the engine to operate in smooth

The mark of a great workman to detail. And it is the result received by the Bu

Buick



Model H-Six-Forty-Nine

ed cars are built for broad service. Their unusual capacity for
by the ordinary bugbears of motoring, and unique chassis
exceptional ability on roads of every kind.

day, nor were Buick cars developed in a single season. They are
twenty years spent in bringing out the possibilities for service in
lve-in-Head motor to the arrangement of the body interiors and
small to receive studious attention.

cars are constructed, not merely to work perfectly in themselves, but
harmony with all the other units.

omplishment, whether in art or in mechanics, is its completeness as
crupulous attention to detail that is responsible for the faithful service
owner, no matter what the nature of his motoring needs may be.

Detroit Buick Owners Employ the



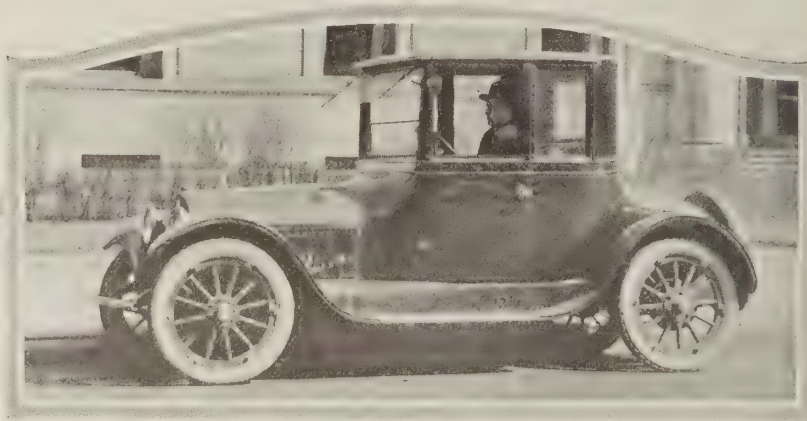
David J. Levy, M. D., baby specialist of national repute, chose the Buick Coupe as his professional car



Mr. David E. Heineman, Wayne County Food Administrator and prominent Detroit attorney, uses a Buick Coupe for wartime activity



Mr. Fred Allison, Superintendent of the Ford Motor Company, drives his Buick Coupe summer and winter for general use



Mr. R. B. Alling, manager of the Detroit Edison Shop, finds the Buick Coupe ideal in his business



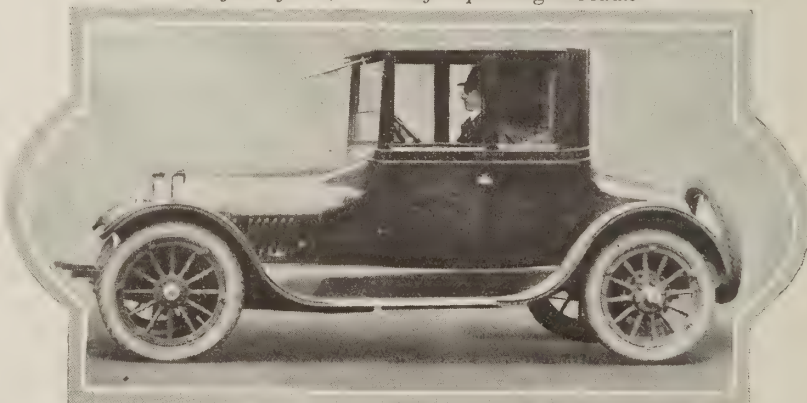
Mrs. H. R. Graham uses the Buick Coupe for her personal car. She is the wife of the secretary and treasurer of Owen & Graham, motor truck dealers



Miss Meyers, of 322 Calvert Avenue, is here shown at the wheel of the family car, a Buick five-passenger Sedan



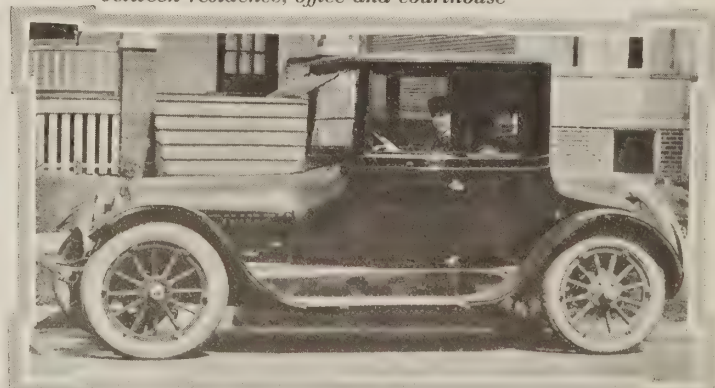
Mr. Max Strasburg, Victrola distributor, chose the Buick seven-passenger Sedan



Mr. J. P. Scallen, Attorney, of Grosse Pointe, drives a Buick Coupe between residence, office and courthouse

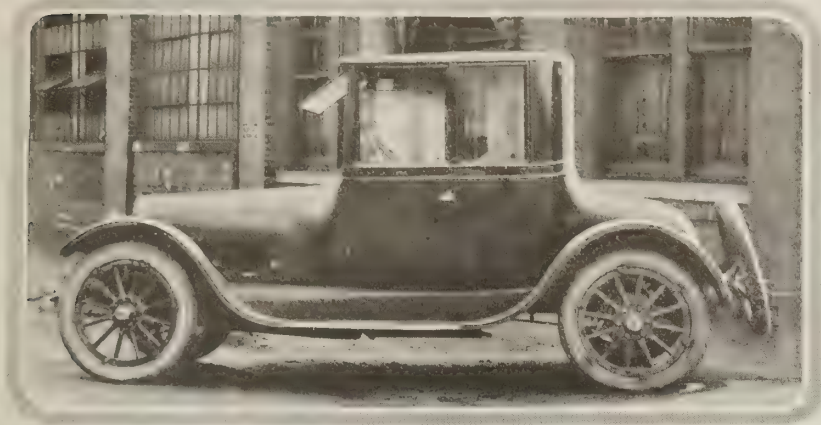


Mr. Wm. Kettle, manager of the Hartwick Lumber and Coal Co., also picked the Buick Coupe for business use



Miss Chesterfield, sister of A. P. Chesterfield, D. D. S., finds the Buick Coupe just as convenient to drive as the doctor does

Closed Car for Year 'Round Use



Mr. Fred G. Christian, president and general manager of the Acme Foundry, has a Buick Coupe as a business auxiliary



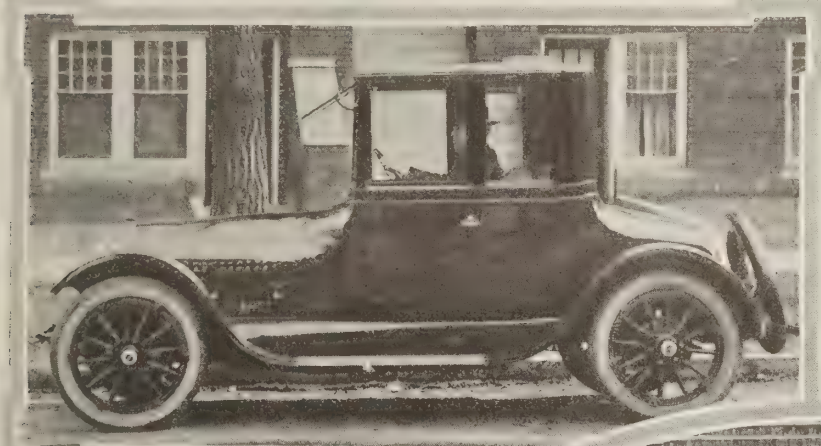
Mr. F. C. Blanchard, vice president of the Detroit Lubricator Co., uses a Buick Sedan and driver for business and family service



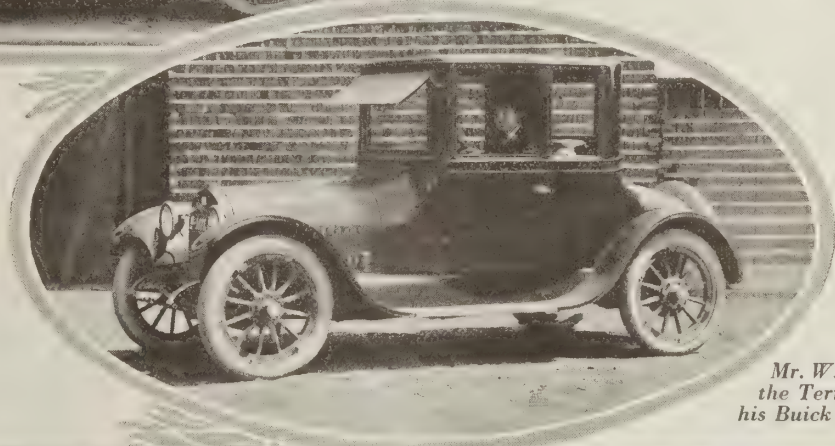
Mr. Harry Stone, men's furnishings, finds the Big Sedan best adapted to his needs



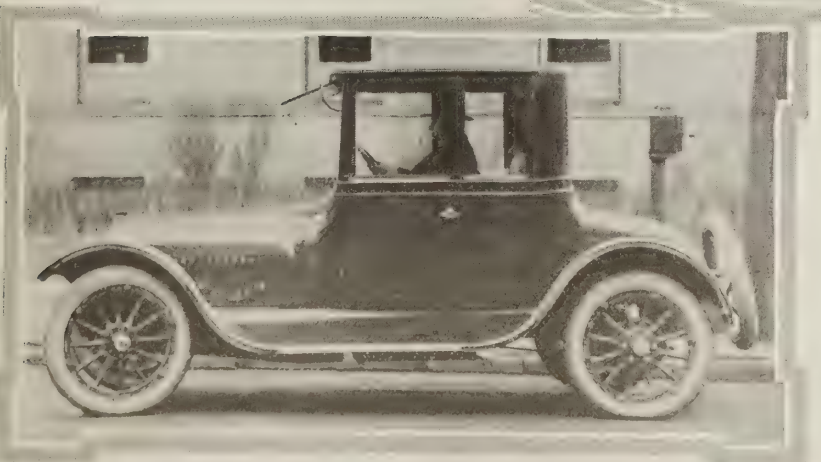
Mr. John A. Heavenrich, men's furnishings, uses the five-passenger Buick Sedan for all purposes



Mr. G. A. Harrison, manager of the Jefferson Theatre, drives his own Buick Coupe in all weathers



Mrs. J. C. Witliff, wife of the candy manufacturer, has a Buick Coupe which she drives with ease



Mr. J. T. Sinclair, one of Detroit's biggest coal distributors, also drives his own Buick Coupe

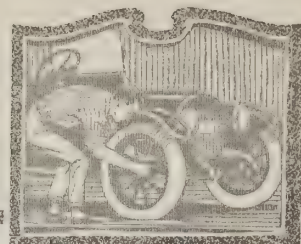


Mr. Wm. F. Rohrbeck, retired, looks after his interests in a Buick seven-passenger Sedan



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



The Steering Gear

THE Buick steering gear is of the semi-irreversible type, and has been designed and constructed to enable the driver to handle the car in the most efficient manner and with the least physical effort. Special features of this steering gear make it capable of absorbing the incessant road shocks without transmitting them to the mechanism in the steering gear housing or to the hand steering wheel.

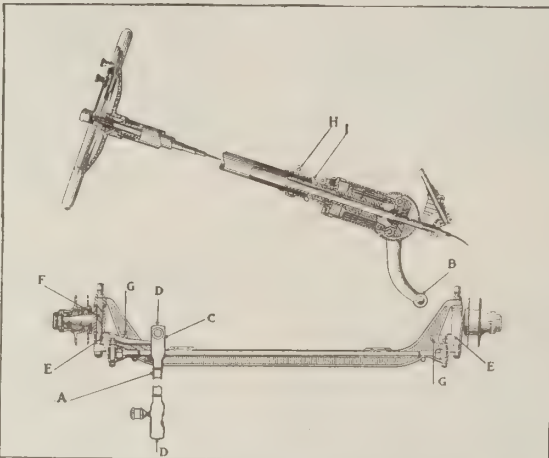
In order to keep these parts working with the same easy smoothness as when new, they should be well lubricated at all times. To properly clean the various parts it is best to take them apart.

By referring to the sketch it will be noted that the connecting drag link (A) fastens to a pitman arm ball (B) at one end and a third arm ball (C) at the other, and is held in place with a socket plug (D), in each end of the rod, with ball seats and springs so placed as to receive the road shocks.

Take out the cotter pins at either end of the

rod and the plugs, springs and ball seats can then be removed. Clean them thoroughly, replace and pack in a good grade of cup grease.

The steering knuckle (E) should be tight on the pivoting king bolt (F). The square



head set screw (G) may be shifted one way or the other to obtain equal throw of the front wheels, making sure the tires do not strike the frame on either side.

To adjust the steering gear so that the car responds instantly to the slightest motion of the steering wheel, first loosen the adjusting screw clamp (H) and then the clamp bolt (I) in the steering gear housing, and turn to the right until all but one-half inch lost motion is removed from the hand steering wheel. Then tighten the clamp bolts and replace the drag link.

When the various parts are disassembled for cleaning they can be easily inspected to see that they are in good condition, and if any of them should be worn from lack of sufficient lubrication or from long, hard use, the wear should be taken up by adjustment or new parts obtained.

These simple adjustments are easily made, and by giving the attention when necessary, the Buick steering mechanism can be kept at top-notch efficiency all the time.

BUICK PERFORMANCE TESTED IN VARIOUS WAYS

Buick the Best Seller

MR. JOHN E. SADLER is the Buick dealer at Anderson, S. C., and recently wrote the following letter to Mr. C. C. Coddington, the Buick distributor at Charlotte, N. C.: "As my present contract is drawing to a close and I am about to enter into a new contract with you, I wish to thank the Buick Motor Co. for the many courtesies shown me during the past year.

"In my nine years in the automobile business I have never dealt with a more reliable and efficient company in every department than your company has been.

"I assure you it has been a great pleasure for me to sell cars under your organization, and certainly appreciate all the courtesies extended to me through the past season.

"I consider the Buick car the greatest car on the market and certainly the best seller."

Seven Years Old—Runs Perfectly

SINCE you last heard from us" (six years ago), writes Miss Mabel Bertschi, of Glenwood, Washington, "we have toured back to Illinois, Missouri, etc.—again—this time being accompanied by a friend and family. We have toured Idaho, Utah, Nevada, Wyoming and Nebraska, besides the eleven states of our first trip six years ago.

"We still have the same old X '17" in which we have made all of our tours, and can truthfully say that it runs as perfectly as it did when we bought it, nearly seven years ago, in Iowa. We are very proud of 'Old Betsy' and would not take two new cars for her. Whenever we start any place we may be sure of getting there safely and on time. Nothing ever goes wrong with her.

"We get the Buick Bulletin regularly every month and take great interest in reading it, especially the personal contributions of the readers."

Not a Minute's Trouble

MR. E. H. DIXON, of Wheeling, W. Va., writes as follows: "I have been a regular reader of the Buick Bulletin for the past two years and find it very interesting.

"I am the owner of a Model C-36 Buick Roadster and from my experience

in motoring in the past three years, will say that there is no car on the market that can come near it in anything near its price class. It has never given me a minute's trouble and my total expense in repairs has been 75 cents. The first two seasons I averaged over eighteen miles per gallon of gasoline and almost as much last year. All trips have been over big hills and some through the mountains."

Has Him Guessing

MR. J. W. HARGREAVES, of New Haven, Conn., local representative for Reckitt's (U. S. A.) Ltd., wrote under date of May 5th: "The writer wishes to express his appreciation of the Buick Bulletin, received by him regularly since he became a Buick user fifteen months ago. I take pleasure and satisfaction in the contents, particularly the instructive articles and pointers on Car Care, etc., which are cut out and filed for reference in case of slight troubles. I drive a Model Four-34 and like many others think it's a wonder. On the hills it can't be beaten. I might add that it is very economical on gasoline, and as for oil, it has me guessing, it needs so little."

A Remarkable Performance

MR. GEORGE R. GARD, councilman of Ord, Nebraska, is a Buick enthusiast of the first water. In a recent letter he writes:

"Thinking perhaps you would be interested in the performance of my Model D-Six-45 that I bought last summer, will say that I have just completed a tour of 1337 miles and the car did this on exactly three pints of lubricating oil. I thought perhaps I had made a mistake, but after checking up the stops and fills I found this to be correct. You may use this letter as a boost for your car, as I call it a remarkable performance."

Buick Saved the Day

VERY urgent business recently made it necessary for Mr. E. Ankey, of New Philadelphia, Ohio, to be in Ann Arbor, Mich., at a certain time. The train schedules did not show any train that he could take to make it possible to keep his appointment, so the Buick dealer in New Philadelphia, Mr. F. S. Hertzog, consented to drive him the entire distance, something over 300 miles. They left in a Buick six at 5:30 P. M. and ate supper in Ashland at 8 o'clock. Four hours later they were in Toledo and two hours after that arrived in Ann Arbor, having covered over three hundred miles in less than nine hours, at an average speed of 33 miles an hour, including several detours made necessary by road repairs.

Yours for Buicks

MR. H. J. PHILLIPS, a merchant of Ridgetop, Tenn., writes: "I have a Buick Model D-Six-45 that I bought a year ago last October and it has given me entire satisfaction. This car has cost so little to keep up that I do not miss the cost.

"I have run it 4500 miles and have never had tire trouble of any kind. I get from 17 to 19 miles per gallon of gasoline and about 900 miles to the gallon of lubricating oil.

"I have never had to buy even a bolt or a screw for my car. I have had this car over some roads that were really too rough for a two-horse wagon and have had it up to 57 miles per hour. Yours for Buicks."

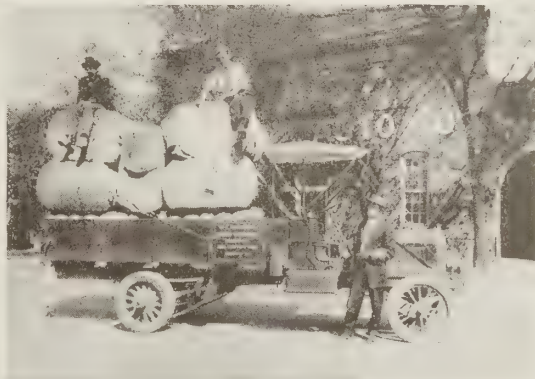


"Hi, Mister! If he gits ya, kin I have yer fish pole?"

Buick Owners and Dealers



"Give 'em thunder"—literally—is the motto of the owner of this Buick Sedan. For he is no less than Monsieur Schneider, proprietor of the Creusot factory in Paris, makers of the "Papa Creusots" and other French guns that are at this moment giving the Huns artificial thunder and lightning along the Western front. M. Schneider, on account of his knowledge of fine manufacturing, is an excellent judge of motor car values



T. K. Hays has been the Buick dealer in Bloomington, Illinois, since January, 1914. He is a good dealer, both from the standpoint of business done and the manner in which he does it. In fact, the volume of his business has been built up on his reputation for service and the reputation of the Buick car, which is the whole story as far as the owner is concerned. No better business plan could be adopted

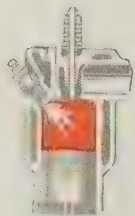


This picture shows the first load of cotton hauled to Montgomery, Ala., via motor truck, also a truck with a phenomenal service record, also the owner, W. L. Ingram, of Snowdoun, Ala., who has the best of reasons for "looking pleasant." For four years the Buick Model S served him as a touring car, was made into a truck in 1910, and has been in constant service ever since at a cost for repairs of less than twenty-five dollars



This efficient, capable looking service car strikes the keynote of the Buick dealer organization in Baltimore, the Auto Outing Company. The car was built to save time and labor in taking care of Buick cars throughout the Baltimore territory, as a part of their well-organized service department. They rightly consider the emergency service call of as much importance to the owner as the routine shop work, such as inspection and overhauling

Mr. Paul J. Killeen has just finished his second year as a Buick dealer in Galesburg, Illinois, with an increase in sales of 300 per cent over the first year. He attributes his success to the ever increasing prestige of the Buick line, backed by prompt and intelligent attention on the part of his service department



In the new building of the Marr Auto Supply Company, Iola, Kansas, the sales and service departments have been worked out admirably in a compact space. Separate entrances for each have been provided, with a side drive for the shop and wide plate glass windows for display purposes. Mr. George J. Marr is the proprietor of this modern establishment

Notes on Good Roads and Touring

THE subject of good roads is one that has been recognized as of prime importance since the days of the Roman Empire, when the Caesars demonstrated that it was an essential in the growth of civilization. But for some unaccountable reason it was rather neglected in America for a long period of years before the advent of the motor car. The light that was shed on the condition of American roads by the automobile gave road building a new impetus in this country and awakened people to the great commercial possibilities that lay in their undeveloped highways. The result is that in the past decade a vast network of excellent roads has spread itself over the United States, connecting the big centers with each other and with the outlying districts dependent upon them. The motor car has been called upon to pioneer this great work, and for this reason may be aptly termed the father of good roads in America. The following letter is from Mr. Harry Locke, a field engineer of Los Angeles, who has compiled many maps and road routes of various kinds with the aid of his Buick car.

"For a number of years," he writes, "I have been engaged in a practical Good Roads missionary work, mapping routes through the southern and southwestern states with a view of co-operating in securing a greater amount of construction by first developing an increased travel over the present ones. The best roads are always where traffic is the heaviest. There is no necessity for good roads where no one goes, hence travel is a condition precedent to any extended highway construction.

"In this work I have traveled over two hundred thousand miles by auto in sixteen states. Naturally this has given me some knowledge of the comparative value of many makes of automobiles. The public seems to have a similar opinion, for wherever I go the first question asked is, 'What car do you drive?' Tires, odometers and other technical equipment are also subjects of inquiry, but the make of car that stands up under a constant everyday grind is of primary interest. With the satisfied air of a father at the christening of his first son with his own name, I proudly reply, 'A little Buick.'

"While others seem greatly interested, I know I am, for the success of the work largely depends on my car. It falls to my lot to travel about all of the bad roads and some of the good ones so that strangers may be guided where the best conditions exist. That information cannot be gained without actually motoring over all of them. There is no conceivable road condition that I do not encounter, so the car that will stand up for me will go anywhere. The Little Buick certainly must be well built throughout, for it has never faltered. During the latter part of 1917 it rambled to all corners of Texas, over



Mount Rainier, in Rainier National Park, from Riese Camp

THE following table is interesting because it shows the extent to which the business concerns of the country utilize the motor car to speed up the transaction of business of every description. The variety of the concerns in this list is especially noteworthy.

The names given represent 25 business concerns who recently purchased 39 Buick cars from the Howard Automobile Company, Buick distributors for California:

American Can Co.	5 cars
Pacific Coast Paper Co.	3 cars
Holbrook, Merrill & Stetson	3 cars
Joseph Brothers Co.	3 cars
California Iron Yards	2 cars
W. S. Worden	2 cars
Shattuck Edinger Co.	2 cars
Consolidated Sales Co.	2 cars
J. G. Johnson Co.	1 car
Coast Valley Gas & Electric Co.	1 car
Ajax Tire Co.	1 car
Baldwin & Howell	1 car
National Lead Co.	1 car
Union Lumber Co.	1 car
J. S. Guerin Co.	1 car
Cluff & Co.	1 car
Ogden Packing Co.	1 car
John Finn Metal Works	1 car
V. Mucci & Co.	1 car
Overseas Shipping Co.	1 car
White Bros. & Crum	1 car
C. B. Jennings & Co.	1 car
Crowley Launch & Tugboat Co.	1 car
Doane Motor Truck Co.	1 car
Mercantile Trust Co.	1 car

road conditions are not ideal all the time, but I have never had trouble with my car and am using it in transcontinental travel in 1918.

"I am getting the greatest tire mileage of my experience, and although they are good ones the car deserves part of the credit. My Buick is comfortable, easy to handle, produces good gas mileage, never boils, has plenty of power, uses very little oil, responds when put against severe tests and has never cost a moment's delay on my long journeys. I expected all of those virtues when I bought it and have not been disappointed. In fact I purchased it without having ridden in one of the same model, but the Buick name has stood for the best in motors and workmanship and I preferred not to rely on my own slight knowledge of mechanics when selecting a machine for hard service.

THE following letter was recently received by the Champlain Motor Company, Buick dealers at Burlington, Vt., from Mr. W. A. Davison, of that city:

"I have just returned from a trip to Atlantic City and Philadelphia, and want to tell you how splendidly the Little Six Buick conducted itself.

"There were four adults, whose combined weight would be over 700 pounds, and then there were four heavy dress suit cases and other paraphernalia such as robes, blankets and overcoats, so that in all it was no light load.

"We went by way of Rutland, Fair Haven, Whitehall, Glens Falls, Saratoga Springs, Schenectady and Albany, and then down the west side of the Hudson through the Catskills to

Newark, Asbury Park and Atlantic City; thence back through the Berkshires, touching Great Barrington, Lenox, Pittsfield and North Adams, where we climbed the Mohawk Trail, then around by way of Bennington up through Manchester and back to Burlington, a total of 1068 miles.

"We averaged a little better than 18 miles per gallon of gasoline, and on the run from Albany to Paterson, N. J., we made a little better than 23 miles to the gallon. Never once on the trip did we stop for engine trouble.

"Everyone on the trip was delighted with the car. It was a delightful trip from every standpoint."



On the Banks of the Yuba River (California)



THE motor car, like the farmers' associations, pays big dividends because through its progressiveness it widens the farmer's possibilities and makes him more efficient in every branch of his work.

The associations keep him in touch with the latest and most practical farming methods. The motor car takes up the work where they leave off, by keeping him in close touch with the very individuals to whom he sells his produce and from whom he buys his



supplies. A large percentage of the automobiles owned by farmers are Buicks, because a farmer is as particular about his car as he is about his livestock. He knows it is not good business judgment to buy either unless it is thoroughbred.

BUICK MOTOR COMPANY, Flint, Michigan
Pioneer Builders of Valve-in-Head Motor Cars



THREE or four cars from different states, side by side in the traffic, was a sight to cause comment a few years ago. But it is the mark of a new era in transportation. Today it goes almost unnoticed.

The growth in the stability of the motor car has brought with it an expansion of its utility, and interstate transportation via motor is the logical sequel. To the Buick owner, a cross-country trip is faced with the same confidence as the morning run to the office. For his car serves



him in whatever capacity he may wish, and under any conditions a motor car could be expected to deal with. It has power and speed, convenience and comfort, but to him its greatest assets are its capacity for continuous, dependable service and for conserving valuable time.

Buick Motor Company, Flint, Michigan

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities — Dealers Everywhere

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THE *Buick* BULLETIN

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SEPTEMBER 1918

VE CENT

COPY



In this Number—

“A Deal in Ostriches”—by H. G. Wells



September



Sweet is the voice that calls
 From babbling waterfalls
 In meadows where the downy seeds are flying,
 And soft the breezes blow,
 And eddying come and go
 In faded gardens where the rose is dying.

At eve, cool shadows fall
 Across the garden wall,
 And on the clustered grapes to purple turning;
 And pearly vapors lie
 Along the eastern sky,
 Where the broad harvest-moon is redly burning.

George Arnold.

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Number Nine



"It all happened in a minute. I was among the first to arrive, and there was this heathen over his gods, and two sailors and the man who had charge of the birds laughing fit to split."

A Deal in Ostriches

by H. G. Wells

TALKING of the prices of birds, I've seen an ostrich that cost three hundred pounds," said the taxidermist, recalling his youth of travel. "Three hundred pounds!"

He looked at me over his spectacles. "I've seen another that was refused at four."

"No," he said, "it wasn't any fancy points. They was just plain ostriches. A little off color, too—owing to dietary. And there wasn't any particular restriction of the demand either. You'd have thought five ostriches would have ruled cheap on an East Indian. But the point was, one of 'em had swallowed a diamond."

"The chap it got it off was Sir Mohini Padishah, a tremendous swell, a Piccadilly swell, you might say, up to the neck of him, and then an ugly black head and a whopping turban, with

this diamond in it. The blessed bird pecked suddenly and had it, and when the chap made a fuss it realized it had done wrong, I suppose, and went and mixed itself with the others to preserve its 'incog.' *It all happened in a minute. I was among the first to arrive, and there was this heathen over his gods, and two sailors and the man who had charge of the birds laughing fit to split. It was a rummy way of losing a jewel, come to think of it.* The man in charge hadn't been about just at the moment, so that he didn't know which bird it was. Clean lost, you see. I didn't feel half sorry, to tell you the truth. The beggar had been swaggering over his blessed diamond ever since he came aboard.

"A thing like that goes from stem to stern of a ship in no time. Every one was talking about

it. Padishah went below to hide his feelings. At dinner—he pigged at a table by himself, him and two other Hindoos—the captain kind of jeered at him about it, and he got very excited. He turned around and talked into my ear. He would not buy the birds; he would have his diamond. He demanded his rights as a British subject. His diamond must be found. He was firm about that. He would appeal to the House of Lords. The man in charge of the birds was one of those wooden-headed chaps you can't get a new idea into anyhow. He refused any proposal to interfere with the birds by way of medicine. His instructions were to feed them so-and-so and treat them so-and-so, and it was as much as his place was worth not to feed them so-and-so, and treat them so-and-so. Padishah had wanted a

stomach-pump,—though you can't do that to a bird, you know. The Padishah was full of bad law, like most of these blessed Bengalis, and talked of having a lien on the birds, and so forth. But an old boy, who said his son was a London barrister, argued that what a bird swallowed became *ipso facto* part of the bird, and that Padishah's only remedy lay in an action for damages, and even then it might be possible to show contributory negligence. He hadn't any right of way about an ostrich that didn't belong to him. That upset Padishah extremely, the more so as most of us expressed an opinion that that was the most reasonable view. There wasn't any lawyer on board to settle the matter, so we all talked pretty free. At last, after Aden, it appears that he came 'round to the general opinion, and went privately to the man in charge and made an offer for all five ostriches.

"The next morning there was a fine shindy at breakfast. The man hadn't any authority to deal with the birds, and nothing on earth would induce him to sell; but it seems he told Padishah that an Eurasian named Potter had already made him an offer, and on that Padishah denounced Potter before us all. But I think the most of us thought it rather smart of Potter, and I know that when Potter said that he'd wired at Aden to London to buy the birds, and would have an answer at Suez, I cursed pretty richly at a lost opportunity.

"At Suez, Padishah gave way to tears—actual wet tears—when Potter became the owner of the birds, and offered him two hundred and fifty right off for the five, being more than two hundred per cent on what Potter had given. Potter said he'd be hanged if he parted with a feather of them—that he meant to kill them off one by one, and find the diamond; but afterwards, thinking it over, he relented a little. He was a gambling hound, was this Potter, a little queer at cards, and this kind of prize-packet business must have suited him down to the ground. Anyhow, he offered, for a lark, to sell the birds separately to separate people by auction at a starting price of eighty pounds for a bird. But one of them, he said, he meant to keep for luck.

"You must understand this diamond was a valuable one—a little Jew chap, a diamond merchant, who was with us, had put it at three or four thousand when Padishah had shown it to him—and this idea of an ostrich gamble caught on. Now, it happened that I'd been having a few talks on general subjects with the man who looked after these ostriches, and quite incidentally he'd said one of the birds was ailing, and he fancied it had indigestion. It had one feather in its tail almost all white, by which I knew it, and so when, next day, the auction started with it, I capped Padishah's eighty-five by ninety. I fancy I was a bit too sure and eager with my bid and some of the others spotted the fact that I was in the know. And Padishah went for that particular bird like an irresponsible lunatic. At last the Jew diamond merchant got it for 175 pounds and Padishah said 180, just after the hammer came down—so Potter declared. At any rate, the Jew merchant secured it, and there and then he got a gun and shot it. Potter made a Hades of a fuss because he said it would injure the sale of the other three, and Padishah, of course, behaved like an idiot, but all of us were very much excited. I can tell you I was precious glad that that dissection was over, and no diamond turned up—precious glad. I'd gone to one-forty on that particular bird myself.

"The little Jew was like most Jews—he didn't make any great fuss over bad luck; but Potter declined to go on with the auction until it was understood that the goods could not be delivered until the sale was over. The little Jew wanted to argue that the case was exceptional, and as the discussion ran pretty even, the thing was postponed until the next morning. We had a lively dinner-table that evening, I can tell you, but in the end Potter got his way, since it would stand to reason he would be safer if he stuck to all the birds, and that he ought to have some consideration for his sportsman-like behavior. And the old

gentleman whose son was a lawyer said he'd been thinking the thing over and that it was very doubtful if, when a bird had been opened and the diamond recovered, it ought not to be handed back to the proper owner. I remember I suggested it came under the laws of the treasure-trove—which was really the truth of the matter. There was a hot argument, and we settled it. It was certainly foolish to kill the bird on board the ship. Then the old gentleman, going at large through his legal talk, tried to make out the sale was a lottery and illegal, and appealed to the captain; but Potter said he sold the birds as ostriches. He didn't want to sell any diamonds, he said, and didn't offer that as an inducement. The three birds he put up, to the best of his belief and knowledge, did *not* contain a diamond. It was in the one he kept—so he hoped.

"Prices ruled high next day all the same. The fact that now there were four chances instead of five of course caused a rise. The blessed birds averaged 227, and, oddly enough, this Padishah didn't secure one of 'em—not one. He made too much shindy, and when he ought to have been bidding he was talking about liens, and, besides, Potter was a bit

and that, so to speak. He kept on saying he'd get an injunction—he had injunction on the brain—and giving his name and address to the chaps who'd bought the birds, so that they'd know where to send the diamond. None of them wanted his name and address, and none of them would give their own. It was a fine row I can tell you—on the platform. They all went off by different trains. I came



"A week or so after landing I was down Regent Street doing a bit of shopping, and who should I see arm in arm and having a purple time of it but Padishah and Potter."

down on him. One fell to a quiet little officer chap, another to the little Jew, and the third was syndicated by the engineers. And then Potter seemed suddenly sorry for having sold them, said he'd flung away a clear thousand pounds, and that very likely he'd draw a blank, and that he always had been a fool, but when I went and had a bit of a talk to him, with the idea of getting him to hedge on his last chance, I found he'd already sold the bird he'd reserved to a political chap on board, a chap who'd been studying Indian morals and social questions in his vacation. The last was the three hundred pound bird. Well, they landed three of the blessed creatures at Brindisi—though the old gentleman said it was a breach of the Customs regulations—and Potter and Padishah landed too. The Hindoo seemed half mad as he saw his blessed diamond going this way

on to Southampton, and there I saw the last of the birds, as I came ashore; it was the one the engineers bought, and it was standing up near the bridge, in a kind of crate, and looking as leggy and silly a setting for a valuable diamond as ever you saw—if it *was* a setting for a valuable diamond.

"How did it end? Well—there's one more thing that may throw light on it. A week or so after landing I was down Regent Street doing a bit of shopping, and who should I see arm-in-arm and having a purple time of it but Padishah and Potter. It quite stunned me for a moment and then—

"Yes—I thought just what you are thinking. You see there's no doubt about the fact that the diamond was real, and Padishah is still an eminent Hindoo—you can see his name in the papers very frequently. But—whether the bird swallowed the diamond is quite another matter,—quite another matter."

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

A DISCUSSION of economy is almost without exception a discussion of quality—plus a little arithmetic. For example, a piece of material that will wear, under certain conditions, for one year, is not as economical to buy and use as another piece of material at twice the price that will wear for three years or more under the same conditions.

So, in discussing the economy of a motor car, or the comparative economy of several makes of motor cars, we must take into consideration not only the consumption of gasoline, oil, tires and other obvious expenses, but we must also consider the quality of the cars themselves. For upon their quality depends their continued economy in these as in all other respects.

For several years past, the Buick Motor Company has been running a series of articles in the Buick Bulletin dealing in detail with the manufacture of Buick cars. In the course of this period practically every unit of the cars has been covered, and in the simplest manner possible, avoiding technical terms, the design, material, workmanship and method of handling even the smallest details in building Buick cars have been described.

THE object of these articles is to let the buyers of Buick cars know in advance of their purchase just what they are getting. Unfortunately, it is not possible for the purchaser of a motor car to examine it critically enough on the salesroom floor, or to observe it during a so-called "demonstration," and accurately determine its quality. Even an expert engineer is not able to do that, because a motor car is made up of numerous parts whose external appearance give no assurance of their ability to render efficient and economical service. You cannot thumb them like a piece of woolen goods or test them as you would a piece of lumber.

Yet each and every one of these parts has a very distinct bearing on the serviceability, and therefore on the economy, of the car.

The relationship of serviceability to economy is extremely close, and it applies with equal force to all the parts that enter into an automobile.

Each part of a motor car has a certain function to perform, and its work must be done under extraordinary conditions as well as ordinary ones. The driver of a car who is confronted by a difficult stretch of road, a steep incline or any of the obstacles encountered in miscellaneous driving, likes to feel, not merely that his motor has the power to carry him through, but that all the other parts of his car will respond to the extra stresses imposed upon them.

And that is only one phase of serviceability. The other phase, dealing

as it does with the ordinary conditions of service, is of even more importance to the average driver. It concerns wear—long life—and demands that the parts be so designed and built as to make them capable of standing up for an indefinite period under the incessant wear and tear of every day use. Many of these parts are constantly moving. Others lie dormant until called upon. But in either case there is a problem of design and manufacture to be solved in order to insure the serviceability that makes for economical operation.

IT IS for this reason that the Buick Motor Company is constantly striving to interest its owners and future owners in the quality of automobile parts and units, no matter how small. For Buick business will increase just in proportion to the number of motorists who become familiar with Buick designing and manufacturing methods.

The motor car has achieved its immense popularity through its ability to economize. It saves for its owner the most valuable thing in the world—time. And this is only another way of saying that it makes him able to do more work and to accomplish more results in a day than he could without it. The expense of purchasing and operating a motor car is dwarfed in comparison to the service it renders to the businessman.

At the same time, the more economically the owner can run his car, both time and expense being considered, the more efficient the car will prove to him.

So the Buick Motor Company and its dealers are interested in seeing that every Buick owner gets the utmost serviceability from his Buick car at as low a cost in time and money as possible. And in taking up this subject, the question of parts is important, both in connection with in-built service and the service that is rendered by the dealer.

Buick parts may be obtained in every locality in the country on short notice, and these service parts are made under exactly the same specifications and manufacturing conditions as the parts in new cars. This means that the owner will receive as much service from them, when correctly installed by a Buick dealer, as if they had been installed at the factory.

BY THE use of a proper amount of discretion it is possible for the Buick owner to reduce the cost of his service even beyond the point guaranteed.

Let us take as an example a Buick owner whose car has been in an accident. First he should see to it that each and every part is inspected to see whether any new parts are really necessary. It should not be assumed that because they have been in an accident they are unfit for service.

Right here it should be noted that

the Buick Motor Company does not recommend that any chances should be taken to save the cost of new parts. At the same time we can see no reason why a Buick owner should pay for new parts when the old ones will serve as well.

Should the body have been dented, the owner would hardly invest in a new body. The dent is easily hammered out so that it cannot be detected even by close scrutiny. The same applies to fenders, dust aprons and other sheet metal parts.

If the front axle should be bent, it does not follow that a new axle is needed. Anybody who is familiar with the construction of Buick axles knows that they are one-piece drop forgings of such quality that they can be twisted and bent in any direction without harm and can be straightened out so they are as good as new. This general rule applies to all the numerous forgings used in building Buick cars.

Buick radiators are so built that if a hole is punched in any part of them, a small section can be removed and replaced with a few new cells, giving the same circulation and satisfaction as before. Sometimes it happens that the spring clips are not kept tight and a spring leaf will be broken in going over an unusual bump or rut. Before ordering a new one, learn from your nearest repair man whether or not it can be welded so as to make a strong joint.

THESE are all points that the Buick owner should bear in mind when accidents occur. If he leaves his car with the dealer with instructions to replace all such parts with new ones, those instructions will be followed, because the dealer has no choice in the matter.

But it should be remembered that the Company and the dealer are interested in his welfare as an owner. Further, they are mighty jealous of the Buick car's reputation, long established, for economy in everything that pertains to motoring service.

This reputation is founded primarily on the fact that all of the parts used in making Buick cars are of such quality as to insure long serviceability. That is where the sciences of engineering and of manufacturing meet. When all the parts are of high quality and correctly made with reference to each other, the result can be nothing short of uniform performance over a long period of time. Parts that are made to withstand the constant jarring and straining of every day driving are not easily injured, and should not be discarded without first being sure that they are unfit for further service.

A dented part does not necessarily call for a new part. A bent one does not always mean a useless one, and as far as the owner is concerned, a dollar saved is a dollar earned.

The Buick Drop Forge Plant

AMONG the thousands of manufacturing operations required to build Buick cars, there is perhaps none of greater importance than that of drop forging.

Drop forging is the modern development of the old method of forging Damascus swords and armor. But the element of luck has been replaced by scientific accuracy, and the swing of the sledge has given way to the giant blows of the steam drop hammers.

The purpose of forging is to refine the steel structure uniformly throughout, by hammering it when heated. The steel is then soft and yielding, and the repeated blows of the great hammers force the atoms of steel closer and closer together, giving a fine, even grain to the part and making it exceedingly tough.

Suitable alloys are added to the raw materials, according to the nature of the work required of the parts. These alloys are decided upon by the engineers, and all the material is carefully analyzed upon arrival at the factory to see that it is up to specifications in every respect.

The Dies

IN order to prevent a waste of labor and material, the forgings are made in dies. These dies are made in two parts, the upper half being carried by the hammer and the lower half in the base. The steel to be forged is placed upon the lower half of the die and the upper half comes down with tremendous force, not only improving the structure of the steel, but roughly forming it into shape.

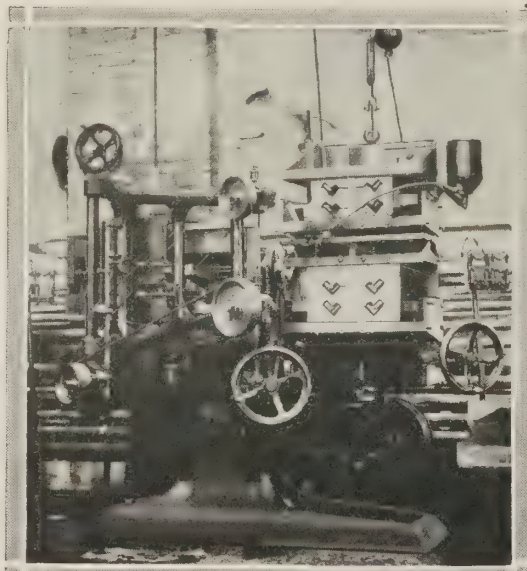
Blue prints of the forgings required are prepared by the Buick engineers and are then turned over to the die making department of the drop forge plant. The blocks from which the dies are made are also alloy steel forgings, in order that they may retain their shape under the constant bombardment of the hammers.

The first operation in making the dies is to place them on a drilling machine and bore the holes in the sides and ends by which they are held in place on the machines used in making them. From the drilling machines they go to



The first step in the manufacture of drop forgings is to make the dies. Blocks of alloy steel, similar to the one shown, are used for the dies because of the tremendous blows required to make the forgings. This gives a solid foundation that prevents the dies from being distorted in use. In order to prepare the blocks for the extremely accurate work of die making, they are placed in this monster planer and faced off on all sides. This planer has been specially designed and built for die work, and is capable of working on two blocks at once making a cut in each one-half inch wide and one-eighth inch in thickness.

the planers, which are of unusually heavy construction because of the work they have to do. Each of these planers is capable of working



The smaller dies are fashioned on this automatic die cutting machine. The master pattern is placed at the top, as shown, while the steel block is held below in front of the tool which duplicates the master pattern.

the patterns of the finished dies are marked out on them from metal templates. The work from this point requires the greatest skill, and only specially trained mechanics are capable of doing it.

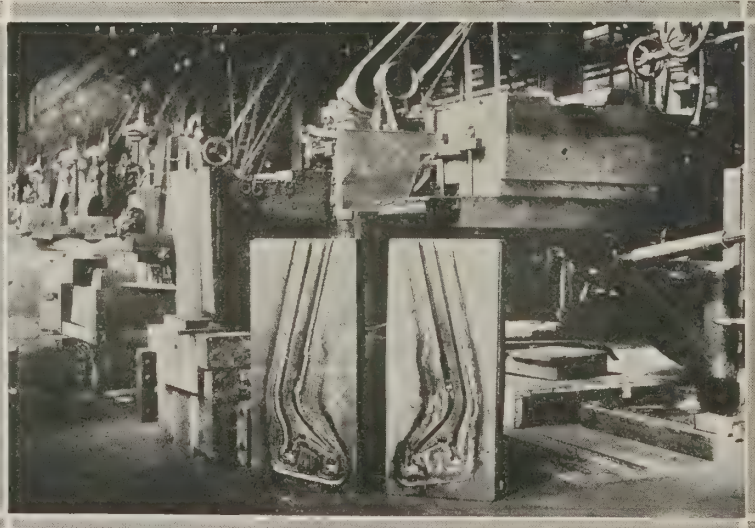
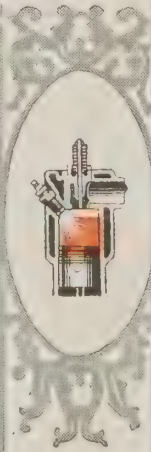
One of the machines used on this work is a mechanical triumph of the highest order, and is known as an automatic die cutting machine. At the top of the machine is placed what is termed a master die, which has been accurately made and checked. This die serves as a pattern for duplication. There are two arms on the machine, one fitted with a slender steel finger and the other, acting in harmony with the first, fitted with a special cutter. When the machine is set in motion, the steel finger begins to move over the master die, searching out every little crevice and turn and depression, while the cutter on the arm below it bores into a blank block held firmly in front of it and reproduces the master die.

In addition to the die itself, which is cut in the center of the block, two preliminary dies, known as an "edger" and a "fuller," are cut on either side of the main die. The purpose of these will be understood when it is explained that the forgings are made from bars of steel, and these preliminary dies are employed to roughly shape the bars before placing them in the die for forging.

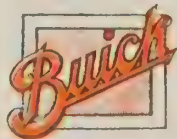
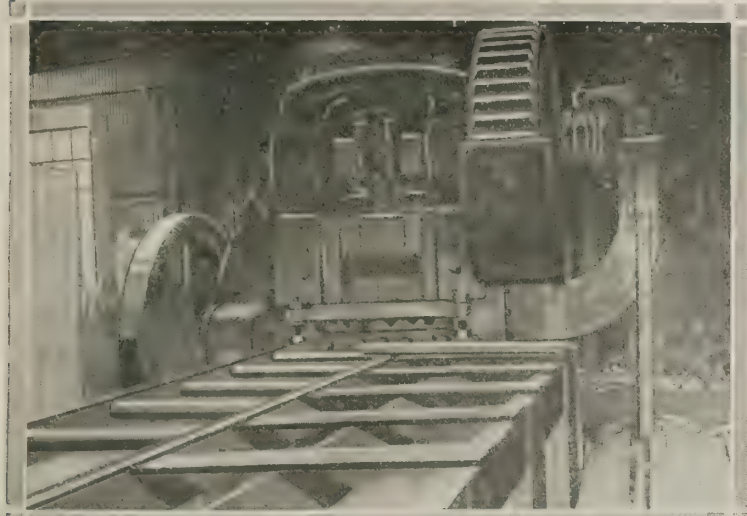
When the machine work on the dies is finished, they are inspected with the greatest care, and in the case of more complicated dies are then smoothed up and finished with hand tools.



The larger dies are cut on this row of machines because their size will not permit of their being cut on the automatic die cutter. The patterns for the dies are marked out on the faces of the blocks from metal templates. The cutting is done by a corps of specially trained die makers, as the work requires the utmost accuracy and exceptional skill. All dies are critically checked against the blue prints by inspectors.



In the case of dies for some of the big forgings, such as front axles, it is customary to make them in sections or to make a die for just half the part, so that one half can be forged first and then the other. For example, the dies here shown are for a Buick front axle. Both ends being alike, the practice is to forge one end at a time, the die being made long enough to overlap in the center.



The alloy steel for making Buick forgings comes into the steel yard at the rear of the forge plant in the form of long bars of the proper diameter. After being analyzed in the chemical and metallurgical laboratories it is placed in the stock bins until needed. At that time it is brought to these immense shears, cut to the proper length and loaded on metal racks for transportation via electric trucks to the forges.

Two types of hammers are used in making Buick forgings. The immense steam hammers have been shown recently in this magazine. Here is a row of the smaller hammers, of the friction lift type, used for the production of smaller forgings. While the forging is being done, a stream of live steam is played on both forging and dies, to remove the scale and keep the surfaces perfectly clean.

The Material

THE material used in making Buick forgings is brought to the rear of the forge plant in freight cars and is unloaded and handled by an immense electric magnet on a traveling crane. This crane is operated entirely by one man, who moves it rapidly backward and forward, drops the magnet into a carload of bars and picks them up like so many matches. The magnet itself can be moved sideways in either direction, so that the load can be dropped or picked up at any spot desired.

The bars are then sorted out and placed in racks, properly marked, and after passing the tests conducted in the chemical and metallurgical laboratories are released for production.

Beside the stock racks is a big mechanical shears, which is used to cut the bars to length. The bars are passed between the blades and against a guide, when the upper blade descends and nips the tough metal off with one motion.

Workmen pile the short lengths onto metal racks, and when the load is ready it is removed by the same type of electric elevating floor trucks described in the story on the foundry. These trucks carry the bars to the furnaces, which are located beside the hammers where the bars are forged. From the racks they are lifted with long tongs and heated in the furnaces until the right temperature is reached, when they are removed in the same manner and placed under the hammers.

The Hammers

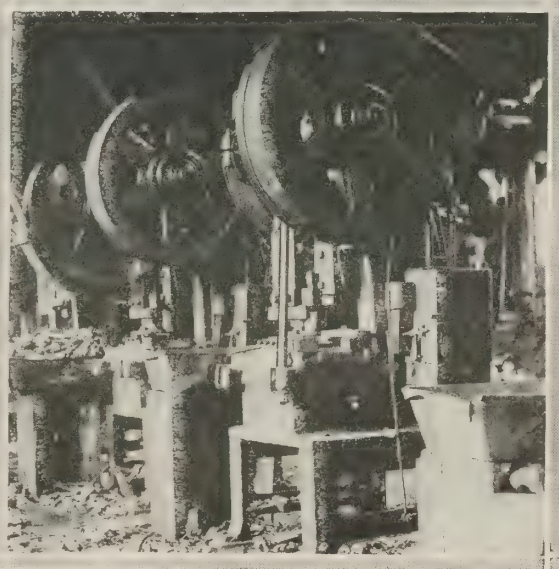
TWO types of hammers are used in the Buick forge plant—immense steam hammers for the larger forgings and friction lift hammers for the smaller forgings. The control of even the biggest hammers is perfect, and the force of the blow as well as the time it is to be struck are entirely governed by the operator.

The concussion of the great battery of hammers is terrific, and in order to get a suitable foundation for each hammer it is necessary to dig a pit into the ground and fill it with a concrete cube from twenty to twenty-five feet each way. On this cube is a hardwood "cushion," formed by bolting hardwood timbers together. The top of the cushion is covered with thick felt, on which is mounted the hammer, with its rigid metal base.

Drop Forging

THE operation of forging is most easily explained by taking a concrete example, such as the front axle. The heated bar is taken from the furnace and placed on the left side of the die and "rolled" under successive blows of the hammer. It is then moved and struck again to form the long part of the yoke (both ends). Then it is placed in the center of the die and hammered to a rough impression of the axle. Next it is lifted out and placed at the front end of the die to form the short end of the yoke (both ends). The follow-

ing blows are struck at the right side of the die, to bend it to the proper shape to put in the finishing die. The rough axle is then re-heated and placed in the finishing die, which is carried by another hammer beside the first one. After coming from the finishing die there is a ragged edge all the way around the axle. This raw edge of thin metal is called "flash," and while the axle is still hot it is placed in a machine



An excess of metal is necessarily used in making forgings, in order to insure the proper filling of the dies. The excess metal forms a thin, ragged edge around the forging, called "flash," and is trimmed off in these trimming machines.

with a cutter the shape of the axle, and this cutter trims the flash off neatly all around. Back into the finishing die goes the axle again to be restruck, in order to guard against the possibility of distortion to the axle due to the trimming of the flash. The axle is again heated and put in a machine called a "bulldozer." The purpose of this operation is to press down the surface of the spring pads, which are somewhat raised after the forging operation. When the axle comes from the bulldozer the spring pads are correctly formed, with a concave surface to receive the springs. The axle is now formed to shape, as far as the forging plant is concerned, and when a number have accumulated they are

taken by the electric floor trucks to the heat treating ovens. It will not be necessary to describe the heat treating operations here, as that is another story. Suffice it to say that the heat treatment of forgings is especially adapted to the sort of work each particular part must do, and plays no unimportant role in still further improving the structure of the alloy steel after it is drop forged. When the heat treatment is over the axles are taken to the pickling vats, which are filled with acid. Into this acid the axles are placed and remain there until all the scale (rough patches of thin metal resulting from the heat and the hammering) is removed. The last operation is to straighten the axles on special machines.

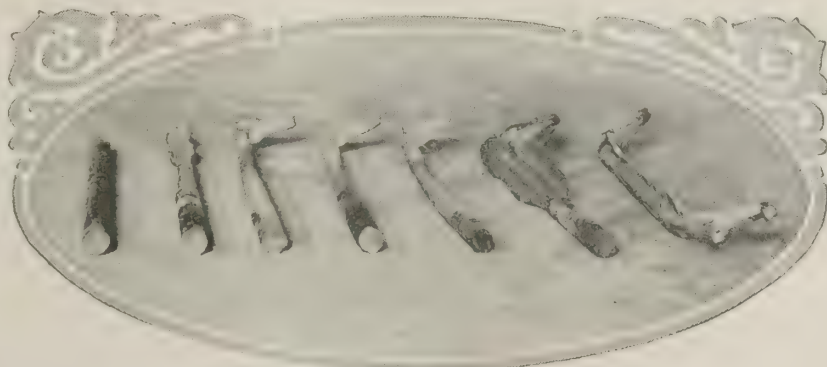
In general, the forging of the various parts is similar to that just described, but of course in the case of the simpler forgings fewer operations are required. In other cases, ingenuity and invention have made it possible to make the more complex forgings with the minimum number of operations. A notable instance is the Buick six-cylinder crankshaft, with its nine bearing surfaces and its six throws projecting from the center at different angles. Ordinarily, such a shaft is forged flat and is then re-heated and bent to shape. But in the Buick forge plant this shaft is forged to shape in one heat and one trip through the hammers.

The Progressive System

THE progressive system of manufacture is employed in the drop forge plant, as in all other Buick manufacturing departments. The conditions peculiar to forging have necessitated the development of an individual system for the forge plant, because it is imperative that the parts and materials move through in batches, instead of in a steady stream. For example, the shears must be adjusted for cutting the bars to suitable length for, say, connecting rod dies. The proper hammer must be equipped with connecting rod dies. A heat treating oven must be prepared for the peculiar heat treatment that is given to connecting rods. So the drop forge plant operates sufficiently in advance of the general production to lay its work out in this manner, and instead of the endless belt or continuous gravity conveyers employed in other Buick departments, the electric elevating floor trucks are used.

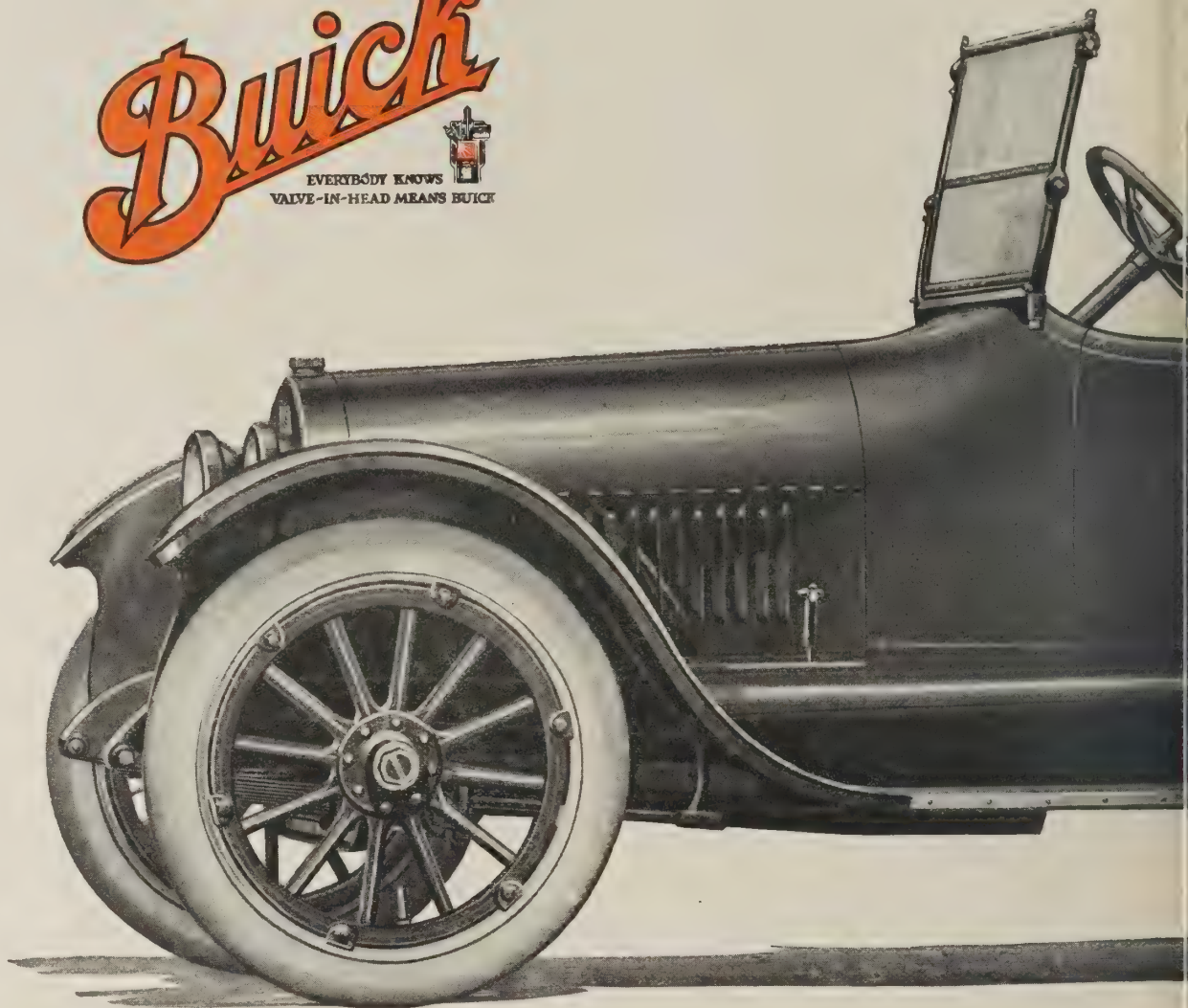
The scrap is handled in the same way, being deposited in the yard at the rear, where it is loaded into freight cars by the electric crane.

The outstanding features of the Buick forge plant are the efficiency of its manufacturing system and the individual treatment of each type of forging. The specifications for every operation, from the making of the dies to the heat treatment of the forgings, are carefully figured out by the engineers and the forge plant experts, and it is this co-operation over a long period of years that has made the high quality of Buick forgings possible.



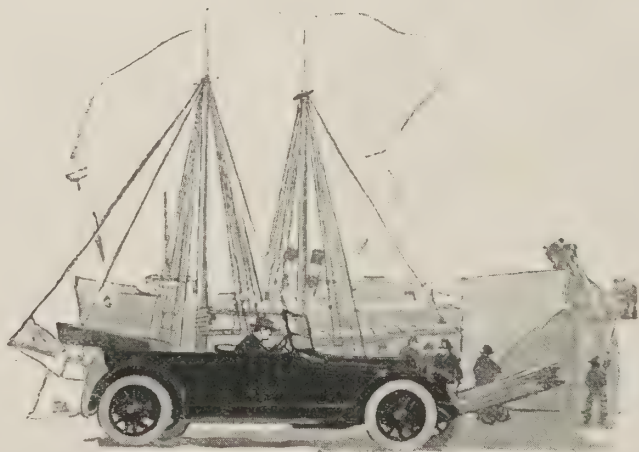
This picture shows the progress of a Buick axle forging. First, the bar of alloy steel. Second, the bar after being "rolled" at the left side of the die. Third, struck to form the long part of the yoke. Fourth and fifth, bent slightly and the small part of the yoke formed. Sixth, one half forged, with flash still on it. Seventh, completed forging ready for heat treatment.

Buick
EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK



The Buick Valve-in-Head

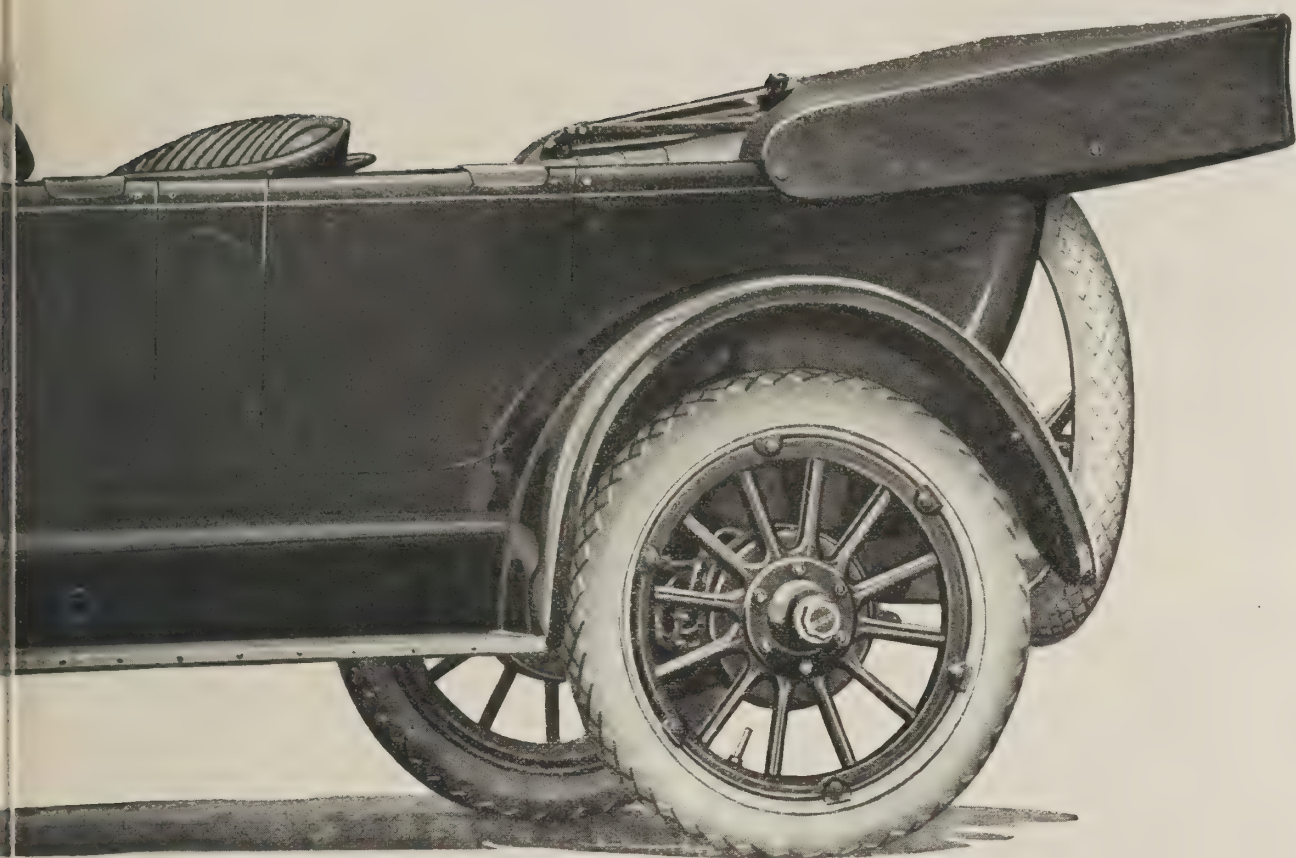
The big requirement in the busy man's car is the same as in any other class of business equipment—ability to produce good results consistently, day after day.



Buick cars, with their automatic and perfectly co-ordinated parts, combined with simplicity and ease.

The mechanical excellence that years spent in developing Buick refinements, each of which are constructed in such a manner and to the saving of time.

The busy man has no patience with a car not dependable according to his needs. Buick cars are constructed in such a manner that they are but in every factor that enters into



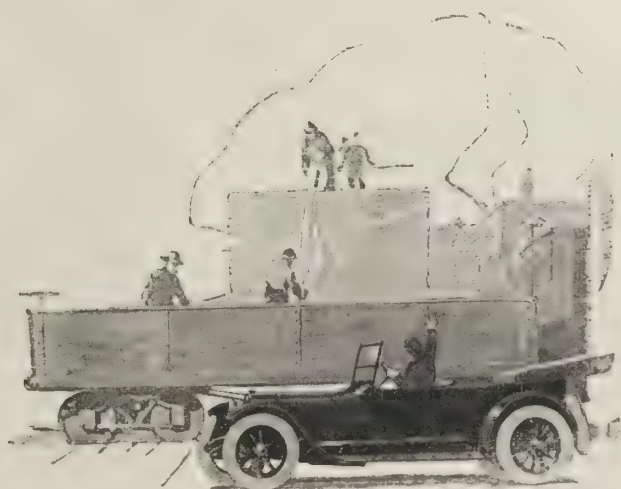
Model H-Six-Forty-Five

Quick and sure transportation between the various branches of a business, or between one place of business and another, expands the executive's effectiveness.

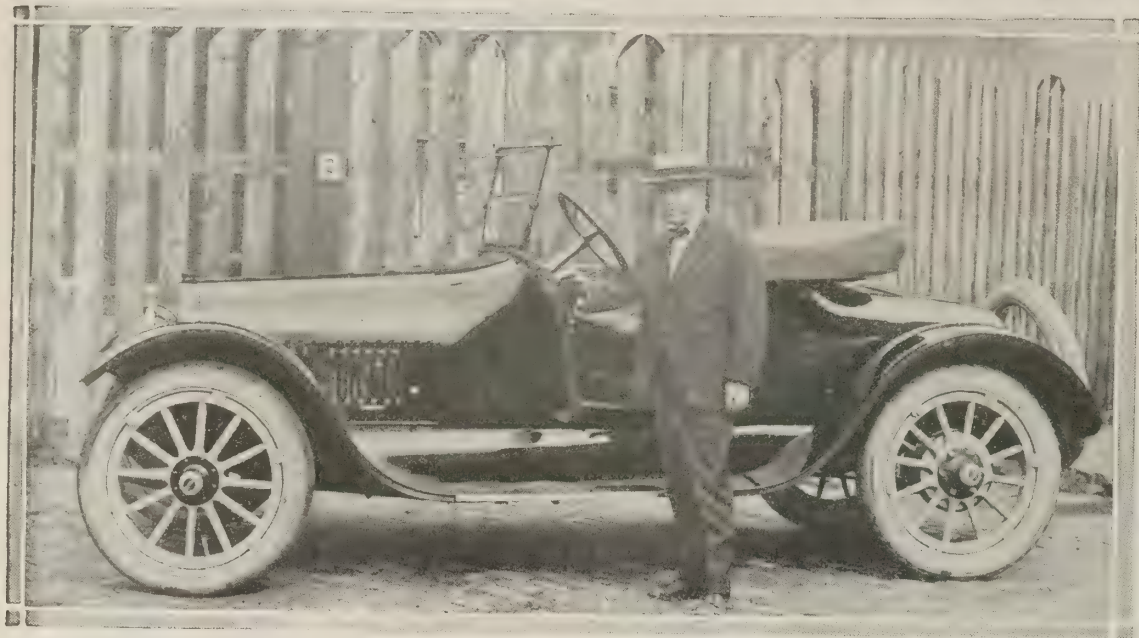
Valve-in-Head motors give extreme serviceability and operation.

has grown out of nearly twenty years is supplemented by innumerable contributions its share to convenience

with any time-saving device that is ideas of dependability. Buick cars as to save time, not in speed alone, to the everyday use of a motor car.



New York State Business Men



"I am now operating a Buick Model E-Six-44 Roadster. Until this summer I did not realize how necessary and valuable an automobile is in order for me to properly carry on my business. My work is such that it necessitates my running around continually, and I find that it would be absolutely out of the question for me to carry on my business properly without the use of a car."—T. H. Hanrahan, President, Buffalo Freight Terminal & Warehouse Co., Buffalo.



"I now have the milk of thirty cows, which I take each day to Wheat's Condensed Milk Co., who have a large Government order. You may be interested to know that I sold one horse and use my Buick Model E-Six-45 instead. I don't know how I could get along with the old horse idea—it's too slow."—Glyn Joslyn, Akron, N. Y.



"The Buick car which I purchased from you last fall has been in constant service in connection with my business, and this amounts to a considerable mileage. I have come to depend entirely upon it for that purpose."—Allen Kendall, President, Kendall Foundry Co., Buffalo.



"I represent the Pillsbury Flour Mills Co., of Minneapolis, and cover the western part of New York State. I use a Buick Model E-Six-44 Roadster for this work entirely, and find with the use of an automobile I am able to properly take care of my business in this large territory, which would not be possible for one man to do using trains and driving a livery horse between small towns in the old fashioned way."—Jos. Bellanca, Buffalo.



"As sales representative, I have operated almost exclusively in the territory of western New York, covering very remote places, many of which, if made in any other way, would mean the tying up of one day to a customer. With the car, I have covered as many as ten customers in a single day, all in different towns. I use a Buick Model E-Six-45 and find it very essential in my business."—A. V. Sendall, North Tonawanda, N. Y. (Fibre Boxes).



"My Buick automobile has proved such a valuable asset to my business that I wish to thank you for urging me to purchase one of these machines at the time I decided to buy an automobile. I do not know how I could get along without it."—Chas. F. Joyce, President, The Chas. F. Joyce Co., Inc. (Insurance).

Find Buick Cars Indispensable

*When Better
Automobiles are Built
Buick will Build
Them*

"We own two Buick cars, kept in use constantly in our wholesale and retail departments. We are thinking seriously of putting on a third car. The factories in this district with which we do business are scattered a great deal and not handy to car lines, and we do not know what we would do without the use of automobiles in our business."—T. Sullivan, T. Sullivan & Co., Buffalo (Hardwood Lumber).



"I rely upon my Buick car wholly in my business. It has never failed me."—Charles F. Rossow, Charles Rossow Contracting Co., Buffalo.



"Being engaged in the canning business, our three Buick cars are called upon for severe service. They play a large part in keeping our business up to the high standard which is expected."—D. C. Pierce, President, Hamburg Canning Co., Hamburg, N. Y.



"I enclose a picture of my Buick Model E-Six-45, loaded with cans of milk ready to start for the condensery. I believe the auto the most important machine on the farm. Uncertain weather in farm work makes every hour count, and on several occasions I have gone to town for implement parts and got back in the field in no time. Automobiles will be as common as plows or binders with every farmer in the near future, for they all contribute to his success in doing the most work in the least possible time."—Melvin Mitchell, Akron, N. Y.



"My Buick car is one of the strongest assets in my business. I thoroughly appreciate its reliability."—E. D. Williams, President and Treasurer, The Williams Tent and Awning Co., Inc., Buffalo.

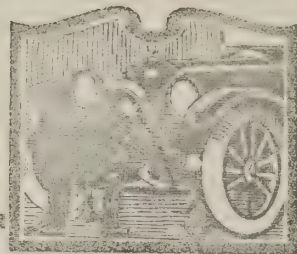


"My Buick car has certainly proved a most valuable asset to my business. I use it constantly and under all weather conditions."—John H. Kam, John Kam Malting Co., Buffalo.



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Adjusting the Front Wheels

TWO features which have a great deal to do with easy steering and long tire mileage on the front tires, are the amount of camber and of "toe-in" given the front wheels.

To explain the difference, camber means inclining the front wheels at a slight angle to the front axle from top to bottom, as shown in the cut (C and D). Toe-in means inclining the front wheels at an angle to the frame from rear to front (A and B).

Both of these adjustments are carefully made at the factory and ordinarily will require but little attention on the part of the driver. The camber is taken care of by the correct making and mounting of the steering spindles and the toe-in is adjusted by the steering cross

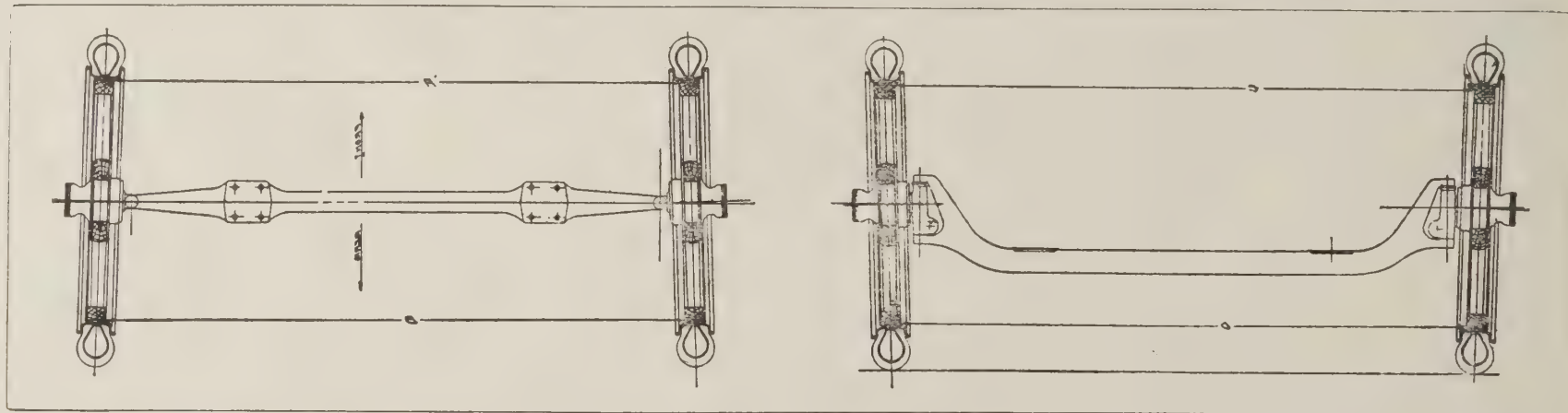
rod. As a rule, any variation in the adjustments is the result of an accident. Many drivers, in drawing up to the curb, unconsciously allow the right front wheel to strike the curb occasionally, in some instances hard enough to slightly bend the steering knuckle. The result is that both of these adjustments are thrown out.

If, on checking them up on your car, you find that the camber is too great or too small, you should make certain that the spindles are straight. The camber is checked by measuring the two distances (C) and (D) on your car to see that (C) measures approximately $1\frac{1}{3}$ inches greater than (D). A slight variation will be permissible.

The toe-in is checked by measuring the distances shown at (A) and (B). (A) should be

about $\frac{3}{8}$ inch greater than (B). This adjustment is easily made by moving the adjustments on the steering cross rod in or out, as may be necessary, until the proper amount of toe-in is secured.

The best and most accurate method of checking these two adjustments is to jack up the front wheels and spin them, holding something against the outer edge of the rims to see that they run true. After this is done, the measurements should be taken as described. In the illustrations the measurements for the camber are from the inside of one wheel felloe to the other at diametrically opposed points top and bottom and the measurements for the toe-in are taken at diametrically opposed points front and rear, but they may be made from the rims if that is more convenient.



BUICKS PROVE THEIR METTLE IN BUSINESS USE

Does the Work of Three

I PURCHASED a Buick Model D-34," writes Mr. Reginald M. Shaw, "from E. A. Metcalf, your dealer at Steamboat Springs, Colorado, in January, 1917, and have used it continuously, winter excepted, as representative of Swift and Company, covering Grand, Moffat and Routt counties, reaching points 100 miles from the railroad. In this time I have driven 15,000 miles without being out a cent for engine repairs other than grinding valves. My car enables me to cover a field that could not be handled otherwise with less than three men."

It should be explained that Mr. Shaw is an extremely large man, both in height and weight. It was necessary to have a special top built for his car to give added headroom, with a special windshield and a change in the tilt of the steering column. His territory embraces the most mountainous part of Colorado.

From a Woman Driver

THE following letter from Miss Blanche Burchardt, of Nellie, Ohio, will be of particular interest to women drivers: "I take all the care of the car and do all the driving and can say I do it all with pleasure. We have large hills to travel over, but the Buick Four does not know what a hill is. It just walks right up on high, and the nearer to the top the faster the Buick travels."

"Last July we took a trip of one hundred and sixty miles in one day and I was not even tired from the driving."

"I have watched the Buick cars and find they do not go to garages very often, as they are strong and well built. After working all day, can take the Buick out for a long ride and come home feeling rested and ready for work again."

"We have been getting the Buick Bulletin and I enjoy reading it and also find many help-

ful things in it that make it easy in caring for the machine. So will say there is no better car on the road than the Buick."

The car referred to is a Buick four-cylinder Roadster.

Senator Observes Tough Test

SENATOR Charles B. McNelly, of Almont, Michigan, writes the following account of his trip in a Buick Six over unimproved roads in Northern Michigan:

"As the guest of the Eastern Michigan Pike Association it was my privilege to make a nine day trip with the Association from Detroit to the Soo and return by automobile, going en route via the Dixie Highway, along the shore line of Lake Huron and returning via 'Over the Top' route through central Michigan—a distance of over 1000 miles."

"The road was not improved all the way, and to say that the Buick made its way over and through the deep, sandy, winding roads through the Jack Pine sections of northern Michigan, with the ease and gracefulness of a ship in peaceful waters, is but a fair comparison."

"This test under my personal observation will be an ever convincing argument of the merit of the Buick Six."

Remarkable Service

I HAVE a 1918 Model E-Six-45 Buick Six," writes Mr. T. B. Meeks, President of the Texas Short Line Railway, Grand Saline, Texas. "I have driven it over all kinds of roads and in all kinds of weather, and the service I have gotten is remarkable."

"I am driving on the original tires and am now going on ten thousand miles, and have averaged from 20 to 22 miles per gallon of gasoline."

"Previously I have driven three different makes of cars and can truthfully say that the Buick surpasses them all in efficiency and economy."

Claims the Best Buick

I HAVE just received my April copy of the Bulletin," writes Mr. L. J. Mitchell, proprietor of the Mitchell Clothing Co., Cassville, Mo., "and in looking through it I see where several parties have been writing you as to how far they have driven their Buick cars."

"I notice that most of them say they have driven them from five to ten thousand miles without any trouble. I claim that is pretty good, but here's one that beats them all."

"I have a Buick Six-45 and it has been driven close to thirty thousand miles and never has given me a minute's trouble. She is still using four of the original spark plugs, and believe me, any time you step on that starter she will tell you all about it."

"You may publish this if you so desire, but I just wanted you to know that five thousand miles wasn't in it."

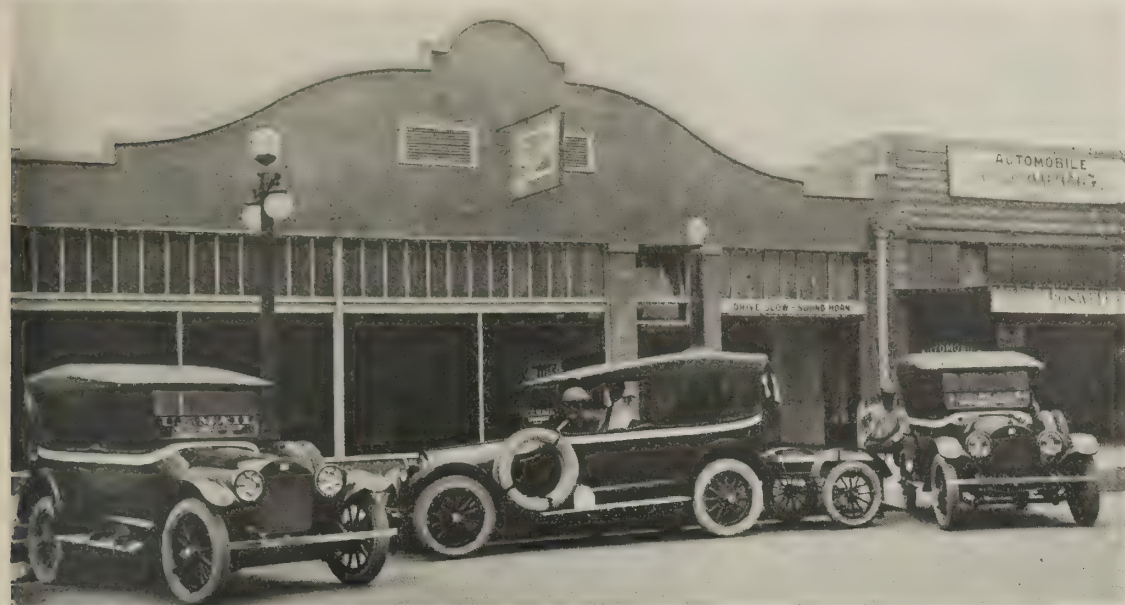
Continued Hard Usage

MY Buick Six has been driven about 14,000 miles," writes Mr. J. C. Adams, of Grand Saline, Texas. "For service and economy in upkeep I do not hesitate to praise the Buick highly. I drive it back and forth to my farm daily and I find it saves time and makes it easier for me to attend to my business. I do not believe any other car than a Buick could stand the hard usage I have put my car to."

Indispensable for Farm Use

I AM in the dairy and farming business here and do not see how I could get along without my Buick Six." This from Mr. W. R. Callier, of Grand Saline, Texas. "In cases of emergency I deliver milk in my car. I make two or three trips to my farm daily, carrying hands, and if I didn't have my car I could not get the help to make my crops. In fact, my car is in use almost day and night."

BUICK CARS IN THE WORLD'S WORK



THE United States Mail has the right of way over practically everything in this country. The postal authorities take advantage of every improvement in transportation facilities to cut down the time required in getting the mail from one point to another.

The accompanying pictures show three Buick cars, equipped with trailers, which are used in handling mail between Roswell and Carrizozo, New Mexico.

Allegheny Physicians Who Drive Buick Cars

Buick cars are eminently adapted to the continuous service required of the physician's motor car and for that reason have become extremely popular with the members of the medical profession. The following practitioners, all of Allegheny County, Pennsylvania, own and drive Buick cars:

Adams, Dr. C. M.
Anderson, Dr. Wm.
Andrews, Dr. H. E.
Barach, Dr. J. H.
Barnhart, Dr. H. A.
Bauman, Dr. H. F.
Bedford, Dr. B.
Beers, Dr. F. E.
Bicking, Dr. C. A.
Blacklock, Dr.
Blackburn, Dr. J. P.
Bradin, Dr. Frank R.
Brown, Dr. J. A.
Brown, Dr. L. V. L.
Brown, Dr. S. S.
Buechler, Dr. J. H.
Bulger, Dr. A. E.
Burkett, Dr. J. W.
Butt, Dr. G. S.
Cadwalder, Dr. J. S.
Caldwell, Dr. H. E.
Campbell, Dr. W. M.
Carroll, Dr. T. B.
Cathcart, Dr. W. B.
Cavanaugh, Dr. N. J.
Chalfant, Dr. S. A.
Christy, Dr. Daniel
Clark, Dr. E. L.
Clark, Dr. H. E.
Clark, Dr. H. L.
Cochran, Dr. T. R.
Colcord, Dr. A. W.
Comerrerr, Dr. J. A.
Conti, Dr. G.
Cowan, Dr. V. W.
Connelly, Dr. W. J.
Crawford, Dr. H. C.
Crawford, Dr. H. P.
Crawford, Dr. J. S.
Crawford, Dr. W. F.
Cunningham, Dr. D. W.
Davis, Dr. E.
Davis, Dr. D. M.
Day, Dr. E. W.
Demar, Dr. W. R.
Dickinson, Dr. B. M.

Dippel, Dr. G. W.
Douglas, Dr. J. A.
Elliott, Dr. C. H.
Evans, Dr. Thos.
Ertzman, Dr. R. L.
Ewing, Dr. A. E.
Feldstein, Dr. George
Fenellosa, Dr. S. K.
Ferree, Dr. R. B.
Fife, Dr. S. J. S.
Fischer, Dr. H. F.
Flatt, Dr. C. C.
Gangloff, Dr. C. L.
Gantt, Dr. A. G.
Gearhart, Dr. D. C.
George, Dr. S.
Gilliford, Dr. R. H.
Gould, Dr. J. E.
Grimley, Dr. R. C.
Grossman, Dr. W. J.
Guckert, Dr. C. S.
Hall, Dr. W. C.
Haines, Dr. A. S.
Hall, Dr. W. W.
Hill, Dr. John
Hinchman, Dr. R. S.
Hocking, Dr. W. C.
Hopkins, Dr. A. J.
Houston, Dr. A. F.
Huff, Dr. C. C.
Humphrey, Dr. George
Hand, Dr. E. M.
Jackson, Dr. C.
Johnston, Dr. F. D.
Johnston, Dr. George C.
Johnston, Dr. J. E.
Jennings, Dr. S. D.
Kelly, Dr. Frank
Kendall, Dr. E. E.
Kennedy, Dr. A. M.
Kerr, Dr. Harry
Kerr, Dr. J. C.
Keyser, Dr. C. F.
Keyser, Dr. H. R.
King, Dr. E. V.
Kirsch, Dr. J. P.

Kneedler, Dr. G. C.
Kocher, Dr. Q. S.
LaRoss, Dr. W. A.
Laughlin, Dr. J. P.
Leidenroth, Dr. C. F.
Lichtenfels, Dr. F. V.
Lowrie, Dr. Robert
Lowrie, Dr. W. J.
Lurting, Dr. C. W.
Mallison, Dr. E. C.
Markel, Dr. J. C.
Marks, Dr. O. L.
Marshall, Dr. A. N.
Marshall, Dr. Watson
Mathewson, Dr. F. W.
Meanor, Dr. H. H.
Mechling, Dr. C. C.
Mehl, Dr. O. H.
Miller, Dr. L. O.
Moyer, Dr. I. J.
Morrow, Dr. N. L.
Morrow, Dr. H. W.
McAboy, Dr. C. B.
McCausland, Dr. W. S.
McCorkle, Dr. S. C.
McCready, Dr. W. A.
McCullough, Dr. A. W.
McGarvey, Dr. S. C.
McGeary, Dr. W. J.
McGogney, Dr. Samuel
McKee, Dr. Karl
McKee, Dr. M. M.
McLellan, Dr. James I.
Nealon, Dr. W. A.
Neely, Dr. Frank
Orr, Dr. C. A.
Osterloh, Dr. C. T.
Patterson, Dr. H. B.
Pershing, Dr. F. S.
Peterson, Dr. A. A.
Petrie, Dr. C. E.
Poole, Dr. R. E.
Powers, Dr. H. K.
Radin, Dr. S. P.
Rankin, Dr. C. A.
Ramsey, Dr. H. E.

Redmond, Dr. M. S.
Reed, Dr. M. L.
Rodgers, Dr. W. H.
Ruben, Dr. J. A.
Ryall, Dr. T. M.
Saling, Dr. J. P.
Sankey, Dr. T. M.
Scatchard, Dr. E. H.
Schaeffer, Dr. C. N.
Seegman, Dr. H.
Segal, Dr. H. M.
Shaw, Dr. W. P.
Sherrill, Dr. A. W.
Silver, Dr. David
Simonton, Dr. T. G.
Smith, Dr. C. H.
Sneeden, Dr. A. R.
Snyder, Dr. W. J.
Speer, Dr. F. B.
Stanton, Dr. C. C.
Steim, Dr. C. J.
Stewart, Dr. C. R.
Stiffey, Dr. W. E.
Sunseri, Dr. F.
Stybr, Dr. J. S.
Stybr, Dr. Jos.
Swandler, Dr. D. C.
Swindler, Dr. C. M.
Taylor, Dr. M. C.
Tomlinson, Dr. W. T.
Traviskis, Dr. A. R.
Truter, Dr. C. W.
Tucker, Dr. George F.
Walker, Dr. D. E.
Walker, Dr. W. E.
Wallace, Dr. J. F.
Wallace, Dr. W. C.
Walter, Dr. Paul L.
Walters, Dr. D. E.
Watson, Dr. W. S.
Werder, Dr. X. O.
Wetherton, Dr. G. E.
Witehead, Dr. J. B.
Williams, Dr. J. A.
Wood, Dr. W. H.

Buick cars reach India already acclimated and ready for business. We have reliable information on this point from Messrs. Rowe & Co., Ltd., Buick dealers in Rangoon, Burma, who find these cars well adapted to the peculiar motoring conditions of that country. It should also be noted that even at so great a distance from the Buick factory, the Buick service organization is extremely well equipped and housed.



This Valve-in-Head aeroplane has never seen any service on the Western Front, but it did have a share in helping the Third Liberty Loan to go over the top in Cleburne, Texas. Incidentally, it won the first prize in the parade. The aeroplane was built and driven by Mr. L. R. Coleman, Buick dealer.



The modern proverb says that yesterday's newspaper is a hard thing to find, but with the aid of the Buick Delivery Car Miss Frances Edminson finds thousands of them every day. She drives this car for the Salvage Department of the Red Cross in San Francisco, collecting all kinds of salvage material to be converted into money for the great cause. A similar car is operated under the direction of Mrs. Spreckles, for the Committee for aiding Civil and Military Belgium and France.



Just to prove that the sun never sets on Buick owners and dealers, we present the establishment of Howard Motor and Cycle Co., Ltd., of Brisbane, Australia. While the American Buick clan is asleep, these gentlemen in the antipodes are busy selling Buick cars and giving service through their exceptionally large and well equipped organization.



This is a strictly business picture, showing Cope's Garage in the background, and six traveling representatives of business houses in the foreground—all Buick equipped. The concerns represented are: Foster Lumber Company, National Biscuit Company, Ridenour-Baker Grocery Co., Challenge Company, Henkle & Joyce Hardware Company, Blish-Mize-Silliman Hardware Company. Some of these cars are driven 500 miles every week, on business. The picture was taken in Norton, Kansas.



Every Business Man has some outside affairs that he must attend to personally and promptly—meetings, appointments, investigations and the like. He employs his motor car to shorten the time required to make his numerous trips, because he realizes that delays en route eat up time that he now uses to commercial advantage.

In selecting motor cars for such service, a vast number of business men have found that Buick cars, in addition to their remarkable power, convenience and comfort, are designed and built to combine unlimited performance with uninterrupted use.

Buick Motor Company, Flint, Michigan

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities — Dealers Everywhere



At the County Fair, the farmer pays the same close attention to the motor car exhibits as he does to the farming implements. For the motor car is indispensable to the modern farmer, particularly in these times when scarce labor makes every single minute precious.

Business makes it necessary for him to make certain trips, regardless of conditions. Yet he cannot always pick his roads, but must take them as he finds them.

So the farmer's motor car must have power and speed, strength and endurance. That is why Buick cars for years have been chosen by the majority of farmers.

Buick Motor Company, Flint, Michigan
Pioneer Builders of Valve-in-Head Motor Cars

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THE Buick BULLETIN

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of the Buick Company

OCTOBER 1918

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In this issue—Conservation of Gasoline—Page 5



Like gray ghosts on a sea of gray
The great gray fleet at anchor rides.
Proud conqueror of the nervous tides,
Whose broken rollers slosh away,
Defeated, from its sides.

There in the doubtful mists they wait,
Tense for the vision they may see
Of grim and ghostly foes when free,
They may at last unleash their great
Red voice of Victory.

Clement Wood.

Published Monthly
in behalf of
Buick Interests
Everywhere

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E.T. Strong Managing Editor

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Volume Six

Flint, Michigan, U. S. A.

Number Ten



He deposited the handbag next to his hand while enjoying a pipe outside. Naturally all this did not escape Billy.

Billy's Tenderfoot

An Express Messenger's Story

By

STEWART EDWARD WHITE

Illustrated by Philip Lyford

DURING one spring of the early seventies Bill Knapp ran a hotel at the crossing of the Deadwood and Big Horn trails through Custer Valley. The hotel was of logs, two-storied, with partitions of sheeting to insure a certain privacy of sight, if not of sound; had three beds and a number of bunks, and boasted of a woman cook—one of the first in the hills.

One evening Bill sat, chair-tilted against the logs of the hotel, waiting for the stage. By-and-by it drew in.

"I got you a tenderfoot," the driver remarked casually.

The tenderfoot wore a light check suit and a flannel shirt whose collar was much too large for him. Billy took this all in while passing.

"Can I get a shake-down here for tonight?" the tenderfoot inquired in a high, piping voice.

"You kin," replied Billy shortly, and began to howl for Charley.

The stranger picked up a small hand-satchel and followed Charley into the building. When, a little later, he reappeared for supper, he carried the hand-bag with him and placed it under the bench which flanked the table. Afterward he deposited it next to his hand while enjoying a pipe outside. Naturally all this did not escape Billy.

The two men sat opposite each other and ate supper, which was served by the red-cheeked girl.

Billy ate expansively and earnestly. Toward the close of the meal Charley slipped into place beside him. Charley was out of humor, and found the meat cold.

"Nell," he cried, "this yere ain't fitten for a hog to eat!"

The girl did not mind, nor did Billy. It was the country's mode of speech. The stranger dropped his knife.

"I don't wonder yo' don't like it, then!" said he, with a funny little flare of anger.

"Meanin' what?" shouted Charlie threateningly.

"You shore mustn't speak to a lady that way," replied the stranger firmly, in his piping voice.

Billy caught the point, and exploded in a mighty guffaw.

"Bully fer you!" he cried, slapping his knee. "Struck pyrites (he pronounced it 'pie rights') fer shore that trip, Charley."

The girl, too, laughed, but quietly. She was a little touched.

In the face of Billy's approval the old man fell silent.

About midnight the four inmates of the frontier hotel were awakened by a tremendous racket outside. The stranger arose, fully clothed, from his bunk, and peered through the narrow, open window. A dozen horses were standing grouped, in charge of a single mounted man, indistinguishable in the dark. Out of the open door a broad band of light streamed from the saloon, whence came the noise of voices and of boots tramping about.

"It is Black Hank," said Billy, at his elbow. "Black Hank and his outfit. He hitches to this yere snubbin' post occasional."

Black Hank, in the Hills, would have translated to Jesse James further south.

The stranger turned, suddenly energetic.

"Don't you make no fight?" he asked.

"Fight!" said Billy, wondering. "Fight! Co'se not. Hank ain't plunderin' me none. He jest ambles along and helps himself, and leaves th' dust fer it every shot. I jest lays low and lets him operate. I never has no dealin's with him, understan'. He jest nat'rally waltzes in an' plants his grub hooks on what he needs. I doesn't know anything about it. I'm dead asleep."

He bestowed a shadowy wink upon the stranger.

Below, the outlaws moved here and there.

"Billy!" shouted a commanding voice, "Billy Knapp!"

The hotelkeeper looked perplexed.

"Now what's he tollin' for me?" he asked of the man by his side.

"Billy!" shouted the voice again, "come down here, you siwash. I want to palaver with you."

"All right, Hank," replied Billy.

He went to his "room" and buckled on a heavy belt, then descended the steep stairs.

The bar-room was lighted and filled with

men. Some of them were eating and drinking; others were strapping provisions into portable form. Against the corner of the bar a tall figure of a man leaned, smoking—a man lithe, active and muscular, with a keen, dark face and black eyebrows which met over his nose. Billy walked directly to this man.

"What is it?" he inquired shortly. "This yere ain't in th' agreement."

"I know that," replied the stranger.

"Then leave yore dust and vamoose."

"My dust is there," said Black Hank, placing his hand on a buckskin bag at his side, "and you're paid, Billy Knapp. I want to ask you a question. Standing Rock has sent fifty thousand dollars to Buck Tail. The messenger went through here today. Have you seen him?"

"Nary messenger," replied Billy, in relief. "Stage goes empty."

Charley had crept down the stairs and into the room.

"What 'n blazes you doin' yere, you ranikaboo ijit?" asked Billy truculently.

"That thar stage ain't what you calls empty," observed Charley, unmoved.

A light broke on Billy's mind. He remembered the valise which the stranger had so carefully guarded, and, though his common sense told him that an inoffensive non-combatant, such as his guest, would hardly be chosen as express messenger, still the bare possibility remained.

"Yo're right," he assented carelessly, "that is—one tenderfoot, who knows as much of ridin' express as a pig does of war."

"I notices he's almighty particular 'bout that thar carpet bag of his'n," insisted Charley.

The man against the counter had lost nothing of the scene. Billy's denial, his hesitation, his half-truth, all looked suspicious to him. With one swift, round sweep of the arm he had Billy covered. Billy's arms shot over his head without the necessity of a command.

"Now," said Black Hank angrily, in a low tone, "I want to know why you tried the monkey game."

Billy, wary and unafraid, replied that he had tried no game, that he had forgotten the tenderfoot for a moment, and that he did not believe the latter would prove to be the sought-for express messenger.

One of the men, at a signal from his leader, relieved Billy's belt of considerable weight. Then the latter was permitted to sit on a cracker box. Two more mounted the little stairs. In a moment they returned to report that the upper story contained no human beings, strange or otherwise, except the girl, but that there remained a small trunk. Under further orders they dragged the trunk down into the bar-room. It was broken open and found to contain clothes of the plainsman's cut, material and state of wear, a neatly folded Mexican saddle, showing use, and a rawhide quirt.

"Tenderfoot?" said Black Hank contemptuously.

The outlaws had already scattered outside to look for the trail. In this they were unsuccessful, reporting, indeed, that not the faintest sign indicated escape in any direction.

Billy knew his man. The tightening of Black Hank's close-knit brows meant but one thing. One does not gain chieftainship of any kind in the West without propping ascendancy with acts of ruthless decision. Billy leaped from his cracker box with the suddenness of the puma and seized Black Hank firmly about the waist.

It was a gallant attempt, but unsuccessful. In a moment Billy was pinioned to the floor and Black Hank was rubbing his abraded forearm. After that, the only question was whether it should be rope or bullet.

Now, when Billy had gone down stairs, the stranger had wasted no more time at the window. He had in his possession fifty thousand dollars in greenbacks which he was to deliver as soon as possible to the Buck Tail Agency in Wyoming. The necessary change of stage lines had forced him to stay over night at Billy Knapp's hotel.

The messenger seized his bag and softly ran along through the canvas-partitioned room wherein Billy slept, to a narrow window which he had already noticed gave out almost directly into the pine woods. The window was of oiled paper, and its catch baffled him. He knew it should slide back, but it refused to slide for him. He did not dare to break the paper be-



The huddled figure on the floor reminded them of what might happen. They obeyed.

cause of the crackling noise. A voice at his shoulder startled him.

"I'll show you," whispered the red-cheeked girl.

"There you are!" she whispered, showing him the open window.

"Thank you," he stammered painfully.

"That's all right," she said heartily, "I owe you that for calling old whiskers off his bronc."

The messenger, trembling with self-consciousness, climbed hastily through the open window, ran the broad loop of the satchel up his arms, and, instead of dropping to the ground, as the girl had expected, swung himself lightly into the branches of a rather large scrub oak that grew near.

Two men mounted the stairway. They examined the rooms of the upper story hastily but carefully, paying scant attention to her, and departed swearing.

At the window she knelt, clasping her hands and placing her head between her bare arms. Suddenly she raised her head. A voice next her ear had addressed her.

"Here, outside," came the low, guarded voice. "In the tree."

"What you doin' there? Thought you'd vamoosed."

"It was safest here," explained the stranger. "I left no trail."

"But, ma'am, I took the liberty of speakin' to you because you seem to be in trouble. Of course I ain't got no right to ask, an' if you don't care to tell me—"

"They're goin' to kill Billy!" broke in Nell, with a sob.

"What for?"

"I don't jest rightly make out. They're after some one, and they thinks Billy's cachin' him. I reckon it's you. Billy ain't cachin' nothin'; but they thinks he is."

"It's me they's after, all right. Now you knows where I am, why don't you tell them and save Billy?"

The girl started, but her keen Western mind saw the difficulty at once.

"They thinks Billy pertects you jest the same."

"I got a job on hand," said he, which same I oughta put through without givin' attention on anythin' else. As a usual play, folks don't care for me, and I don't care much for folks. Women especially. They drives me plumb tired.

But, you treated me white tonight!

The girl heard a faint scramble, then the soft pat of someone landing on his feet.

The men below stairs, after some discussion, had decided on bullet.

In order not to delay matters the execution was fixed for the present time and place. Billy stood with his back to the logs of his own hotel, his hands and feet bound, but his eyes uncovered. He had never lost his nerve. In the short respite during preparation he told his opponents what he thought of them.

Black Hank distributed three men to do the business. There were no heroics. The execution of this man was necessary to him, not because he was particularly angry over the escape of the messenger—he expected to capture that individual in due time—but in order to preserve his authority over his men. He was in the act of moving back to give the shooters room when he heard the door open and shut.

He turned. Before the door stood a small, consumptive-looking man in a light check suit. The tenderfoot carried two short-barreled Colt's revolvers, one of which he presented directly at Black Hank.

"Hands up!" he commanded sharply.

Hank was directly covered, so he obeyed. The newcomer's eyes had a strangely restless quality. Of the

other dozen inmates of the room, eleven were firmly convinced that the weapon and eye not directed at their leader were personally concerned with themselves. The twelfth thought he saw his chance. To the bewildered onlookers there seemed to be a flash and a bang instantaneous. One of the stranger's weapons still pointed at Black Hank's breast; the second, at each of the others. Only the twelfth man, he who had seen his chance, had collapsed forward to the floor. No one could assure himself positively that he had discerned the slightest motion on the part of the stranger.

"Now," said the latter sharply, "one at a time, gentlemen. Drop your gun!" This last to Black Hank. "Muzzle down. Drop it! Correct."

One of the men in the back of the room stirred slightly on the ball of his foot.

"Steady there!" said the stranger. The man stiffened.

"Next gent," went on the little man, subtly indicating another.

One after another the pistols clashed to the floor. Not for an instant could a single inmate of the apartment, armed or unarmed, flatter himself that his slightest motion was overlooked. They were like tigers on the crouch, ready to [Continued on page twelve]

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

GASOLINE has come to be one of the great necessities of war, just as it is of ordinary business. And the federal authorities, in order to conserve the supply of gasoline as much as possible, asked the owners of motor cars to refrain from driving their cars on Sundays.

The idea behind this request is to conserve gasoline without interfering in any way with the use of motor cars for business, as physicians and others who must use their cars on Sundays are exempt. A most commendable spirit has been shown by motor car owners in this respect, and very few violations have been reported.

But the conservation of gasoline should not be confined to Sundays. By observing certain rules and precautions, it is possible for the drivers of cars to save a considerable amount of gasoline during the week without depriving themselves of the use of their cars.

Economy in gasoline consumption naturally starts with the design of the motor in the car. You can't get economy from a wasteful motor. The Buick owner, however, is well fortified in this respect because during the development of the Buick Valve-in-Head motor the strictest attention has been paid to economy. It is true that the Buick motor has always been noted for its power, but power alone may be secured by increasing the size or the number of the cylinders on almost any motor. The success of the Buick motor is largely attributable to the fact that it develops the maximum of power from a given quantity of gasoline. That is true economy and is made possible by several unique features of design, chief of which is the fact that the Buick motor has less water jacketed space than any other type of motor.

THEN comes the question of driving—of operating the motor in such a manner as to secure the maximum mileage from every gallon of gasoline. Simple as this may seem, and is, the fact still remains that not all drivers get the best efficiency possible from their motors. For this reason it is quite important that the dealer should, when turning a new car over to the purchaser, be sure that he is familiar with all the driving adjustments and the conditions under which they should and should not be used.

Great progress has been made in the past few years in carburetion and intake manifold construction, and it is an actual fact that the Buick car of today has a far better gasoline mileage on low grade gasoline than the cars of seven or eight years ago achieved on high test gasoline.

In addition to improvements in the carburetor itself, the old choker wire that was then pulled out while cranking

the car has been extended to the dash and the choker has been developed into a dash adjustment for the carburetor, to meet any driving conditions that may be encountered. Naturally, a little practice in the use of this dash adjustment is necessary to get the best results, just as it is necessary to have some practice to shift gears smoothly and noiselessly. In order to thoroughly explain the simple functions of this dash adjustment, a special article has been prepared for this issue of the Buick Bulletin and will be found on page 12.

NEXT comes the manipulation of the spark lever. Probably every driver knows the principle under which the spark is regulated to the speed of the motor, but many of them fail to apply their knowledge in all cases. The spark in the motor should take place at the completion of the compression stroke on the upward travel of the piston, so that the charge may be ignited at the instant the piston is starting on its downward travel. This, however, is a rule to which there is the usual exception. When the motor is traveling at a good rate of speed the spark should take place slightly before the piston reaches the top of its stroke, because a certain instant of time is required for the charge to ignite and expand, and the finished driver will take advantage of this instant by advancing his spark lever to the point where he secures the most power and efficiency from the gasoline.

But the advantage gained from the advanced spark at high speeds is not only lost at low speed, but actually operates to the disadvantage of both motor and mileage. This disadvantage is usually signalled to the driver by a "spark knock," which is caused by the premature ignition of the charge. The upcoming piston is met by the force of the expanding gases and must resist them until it can pass its highest point and start on the downward travel. Indeed, if it were not for the weight of the flywheel and the momentum of the car, the piston would be forced back down again. A good driver will not wait for the spark knock to notify him. As soon as he slows the motor down he will retard the spark sufficiently to take care of the reduced motor speed.

THE question of letting the motor idle when standing still has been brought up many times. The answer must be left to the judgment of the individual operator. The Buick motor when turning over slowly without a load burns very little gasoline—much less in a few minutes of idling than would be required to start the motor by operating the choker and drawing in a rich, heavy charge. The hand throttle on the steering wheel quadrant is

adjusted, when the car leaves the factory, so that the motor turns over quite slowly with the throttle closed. If your motor seems to idle too fast, the hand throttle should be adjusted by means of the set screw on the carburetor throttle valve lever.

In starting the motor, the driver should naturally be governed by weather conditions and the temperature of the motor itself. In cold weather, with a cold motor, it is of course necessary to use the choker, but not so liberally as to flood the cylinders with raw gasoline. With a warm motor it is not necessary to use the choker at all in starting.

In stopping the motor when you expect to start it again shortly, it is well to open the throttle wide, without touching the choker, and draw in a full charge of vaporized mixture with the last two or three revolutions of the motor for use in starting again. If you are putting the car away for the night, or for a considerable length of time, it is best not to do this, because as soon as the motor gets cold the mixture will condense and you will have to use the choker when you wish to start again.

STUDY the use of the throttle, and avoid opening it suddenly while the motor is running. This practice is wasteful, because it introduces a larger charge of mixture than the motor can accommodate at that speed. Gradually opening the throttle permits the motor to accelerate normally and converts all the gasoline into power. This explains why one driver can drive a car up a hill in high gear, while another driver with the same car will fail to make the same hill on high. The first driver increases his speed gradually, while the second attempts to rush the hill, chokes his motor with an over-rich mixture and must then shift to second to work off the excess fuel. To illustrate this point to your own satisfaction, open the throttle suddenly when the motor is idling, then close it and see how the motor picks up speed working off the extra charge.

The Buick owner who puts these suggestions into practice, in connection with those offered in the article on page 12 above referred to, will bring about results that will be eminently satisfactory to him. In the first place, he will be feeding the fuel to his motor so scientifically that the motor will have a chance to digest it thoroughly, which makes for excellent performance over a much longer period of time than otherwise.

Secondly, and more important under present conditions, he will have the satisfaction of knowing that he is effecting a real economy in fuel at a time when fuel should be conserved by every patriotic citizen.

BUICK HEAT TREATING PROCESSES

THE discovery of steel was followed by a tremendous revolution in manufacture, and the more modern discovery of heat treatment has had an effect that is almost as far-reaching, particularly where strength, resistance to wear and lightness are important factors. It is literally true that without heat treatment the modern automobile could never have been brought to its present high state of efficiency.

Plain carbon steel of good quality has the properties of strength, ductility and resistance to shock. By the scientific use of heat treatment these properties can be greatly improved, and in recent years alloy steels have been developed, which, after heat treatment, give results vastly superior to those of the best heat treated carbon steels. Thus, by making certain parts of stronger and tougher steel, it is possible to increase their durability and at the same time decrease their weight.

The whole theory of heat treating hinges around the fact that every kind of steel has what is termed a "critical point"—i. e., a point to which it may be heated without changing its structure, but when it is heated somewhat beyond this point and cooled, its structure becomes much improved and refined, with a corresponding improvement in its utility for special purposes.

At the Buick plant there are heat treating departments in connection with different factories, so arranged as to perform the heat treating operations at the proper stage of manufacturing without interfering with the system of progressive manufacture. Each of these departments is organized and equipped to give the exact heat treatment required by the particular parts handled there, as specified by the Buick engineers.

THE upbuilding of the steel structure naturally starts with the raw material. For example, a large percentage of the heat treated parts entering into the makeup of Buick cars is made from drop forgings. The drop forgings, in turn, are made from bar stock, built to Buick specifications at some of the large steel mills. Now, just any bar stock at all cannot be used for any and all forgings. The work the finished part is to do must be taken into consideration by the engineers so that the bar stock may be ordered with the right percentage of carbon or special alloy to give the required quality of toughness, hardness, etc., after heat treatment. Thus the specifications for crankshaft stock are entirely different from those for transmission gear stock, because the crankshaft must have toughness as its principal characteristic, while transmission gears must have

extremely hard teeth to resist the wear of constant service.

The bar stock is made from castings, or ingots. These ingots are heated and passed between large rollers while hot, and as they are rolled and elongated by this action the coarse grained structure existing at the casting temperature is refined, blow holes are welded up, thus giving the material a close-knit character of great uniformity. The temperature at which the rolling is finished is just above the critical point, so that the bar stock when ready for shipment not only contains the correct percentage of carbon or alloy, but its structure is very much improved.

When the bar stock is received at the Buick factory it is tested in the chemical and physical laboratories, in order to make

certain that it conforms to the engineering department's specifications and is entirely free from physical defects.

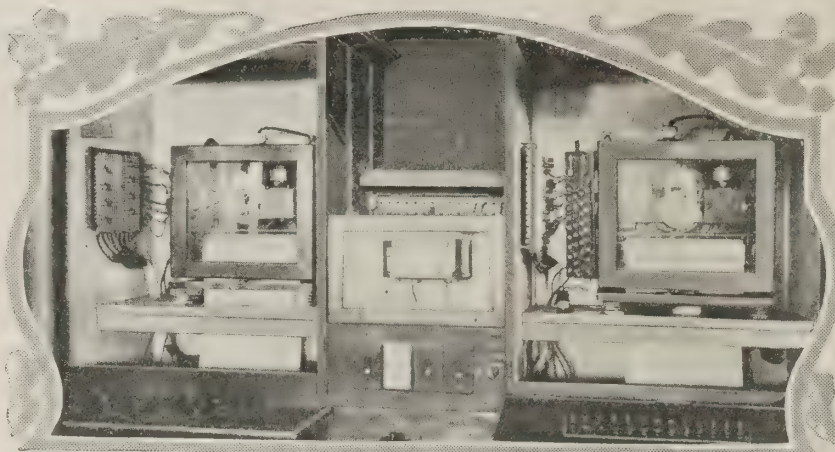
Buick drop forging methods have been described in a previous article. All forgings are made from carefully manufactured bar stock, to make sure that the forged blanks contain the right material to secure the best results from the heat treating operations that follow.

As stated above, the science of heat treating centers about the critical point of the metal, but experience and research have shown the engineers how this treatment can be varied in its application to suit the conditions that each of the parts must encounter in service. For example, the principal requirement in the drive shafts in the rear axle is toughness—i. e., the structure of the steel should be uniform throughout and not too hard.

On the other hand, a differential gear should not be uniform throughout. The teeth should be extremely hard, to resist wear, while the interior structure should be very tough. After the gears have been forged and machined they are case hardened. This operation consists of placing the gears in sealed tubes containing a material capable, when heated, of imparting a high percentage of carbon to the outer part of the gears. The combination of an extremely hard surface with a soft, tough core assures Buick owners of differential gears that are exactly made for the service required of them.

CARBONIZING steel is quite a study all in itself. The carbonizing compound is placed in tubes or boxes and the parts to be carbonized are then packed in the compound in such a manner that there is sufficient compound on all sides of them to permit of their absorbing the carbon freely. The boxes or tubes are then carefully sealed with fire clay so that none of the gases can escape. In some cases it is desired to carbonize only a portion of each part. This is done by copper plating the parts all over and then scraping the copper off the portions to be carbonized. The carbon will not penetrate the copper but will be absorbed where the copper is scraped off. This method is followed in such parts as bearing races, where it is desirable to have an extremely hard face backed by less brittle material.

In the case of many heat treated parts that require machining operations to complete them, the practice is to machine them before heat treatment, while the material is still soft enough to machine readily. In this event the heating, instead of being done in furnaces, is



This automatic recording thermo-electric pyrometer records the temperature in each heat treating oven every eleven minutes. Special readings may be obtained at any time. All Buick heat treating departments are equipped with these scientific instruments.



After carbonizing, Buick camshafts are treated in this specially designed lead bath at the rate of one every four minutes.



Narrow lead baths for tempering parts. The pile of material at the right is powdered charcoal, used to prevent dross from forming on the surface.



Another type of lead baths. These low, flat baths are used for hardening certain parts in lead.

done in great pots of heated lead, which insures the proper penetration of the heat to every part of the metal, but absolutely prevents the formation of scale on the outside of the part.

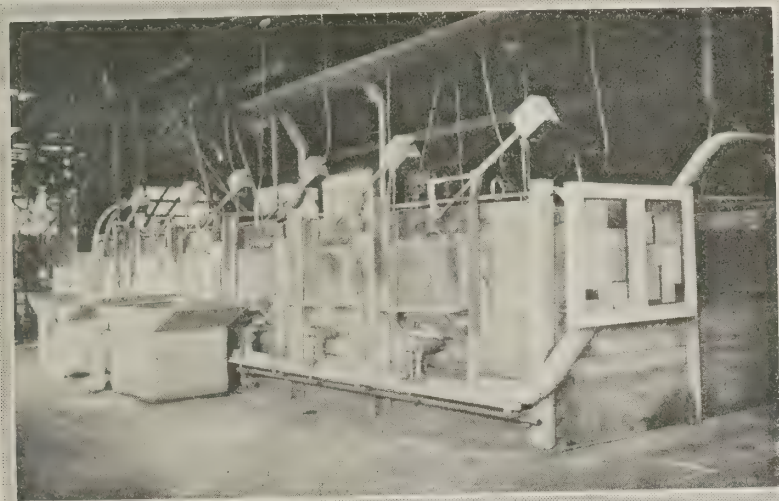
THE furnaces in which the heat treatment is done are of the first importance, and throughout the Buick heat treating departments the furnaces have been especially designed for the work they have to do. Some of these furnaces are of great size, while others are much smaller. But in all of them, the first requisite is to see that the heat is distributed evenly to the very center of the parts being treated. This is what is termed a soaking heat and is continued for a number of hours in order that the structure of the metal in the finished parts will be perfectly uniform.



Buick camshafts are packed in long malleable iron tubes, surrounded by carbonizing material to case harden the surfaces. The ends of the tubes are sealed with fire clay.

THERE are also some castings entering into the construction of Buick cars that are annealed in the heat treating department. This practice is followed in order to avoid the possibility of warping, which might sometimes result from strains caused by the outside of the castings cooling quicker than the inside. This is one reason why Buick pistons fit perfectly for an unlimited length of time. By annealing the pistons before the machine work is done, the strains are done away with, and when the pistons are machined they will stay perfectly round. For the same reason, Buick piston rings are thoroughly seasoned before grinding.

The method of handling material in the heat treating departments is very much the same as in other Buick departments. The quenching vats are conveniently located beside



Parts to be carbonized are placed in these carbonizing furnaces, after which they are allowed to cool in the pipes or boxes.



Different types of baths—cyaniding, oil tempering, tempering in nitrate and heat treating in lead.

Each Buick furnace is fitted with thermoelectric pyrometers, which tell accurately just what the temperature in any furnace is at any given time or over a period of time. These pyrometers are of the most improved type, with recording attachments, so that the men in charge of the work can go to the pyrometer at the end of the day or at any time during the day and tell just the degree of heat that has been applied to every part treated during that day, and the length of time the heat has been applied. This is a very essential part of heat treatment, because in order to get uniformly good results from heat treatment it is necessary to keep the heat just above the critical point for a sufficient length of time to insure that the parts have been correctly heated throughout.

After heating, comes the quenching operation, which must also be suited to each individual part. Some parts are quenched in water, while others that might be warped from the hardening strains, are quenched more slowly in a special grade of oil.

THE last phase of heat treating is the "drawing" operation, in which the parts are heated at a very low temperature. Drawing is a sort of annealing process, to replace some of the hardness resulting from the quenching operation with a certain degree of toughness. In the case of gears with extremely hard teeth, the heat is kept just high enough to toughen and remove strains without having any appreciable effect on the hardness of the teeth.

The inspection system followed throughout the heat treating departments is most thorough. Such parts as are heat treated but not case hardened are tested with the Brinell testing machine. This machine contains a hard steel ball which is pressed against the part to be tested. A uniform pressure is maintained and by

measuring the depth of the depression made by the ball, it is possible to tell whether the part is too hard, too soft or just right. Some case hardened parts are tested with the scleroscope, which tests the hardness of the part by measuring the height to which a diamond pointed steel ball will rebound when dropped from a certain height on the part.

In addition to these tests, samples are taken from each lot of heat treated parts and sent to the laboratories, where they are tested on machines which check their physical properties. Other parts are broken and the fractures examined under the microscope to see that the steel structure is up to the specified standard. Chemical tests are also made to check up the percentage of carbon or alloy in the steels. Copies of these reports are sent to the heads of the respective heat treating departments in order that they may be fully informed at all times of the results of their work.

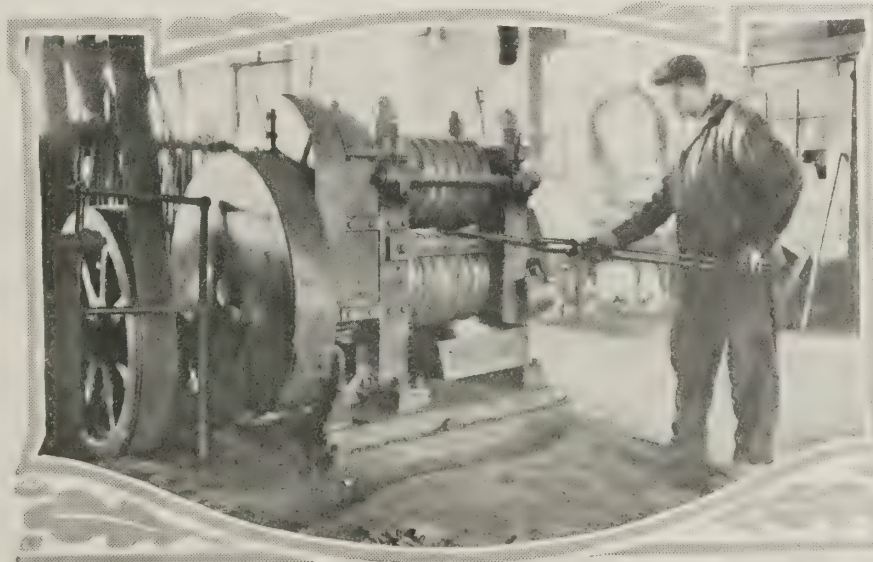
Some parts are given a double heat treatment in order to give them exceptional strength or long wearing qualities.

the furnaces and lead pots, so that the parts may be quenched as soon as ready without loss of time or rehandling. Suitable racks and containers are provided for handling the parts in quantity, both to and from the furnaces, electric floor trucks being used to transport them. Carbonizing material is mixed and ground at a central point and placed in chain bucket conveyors that deliver it to the workmen ready for use.

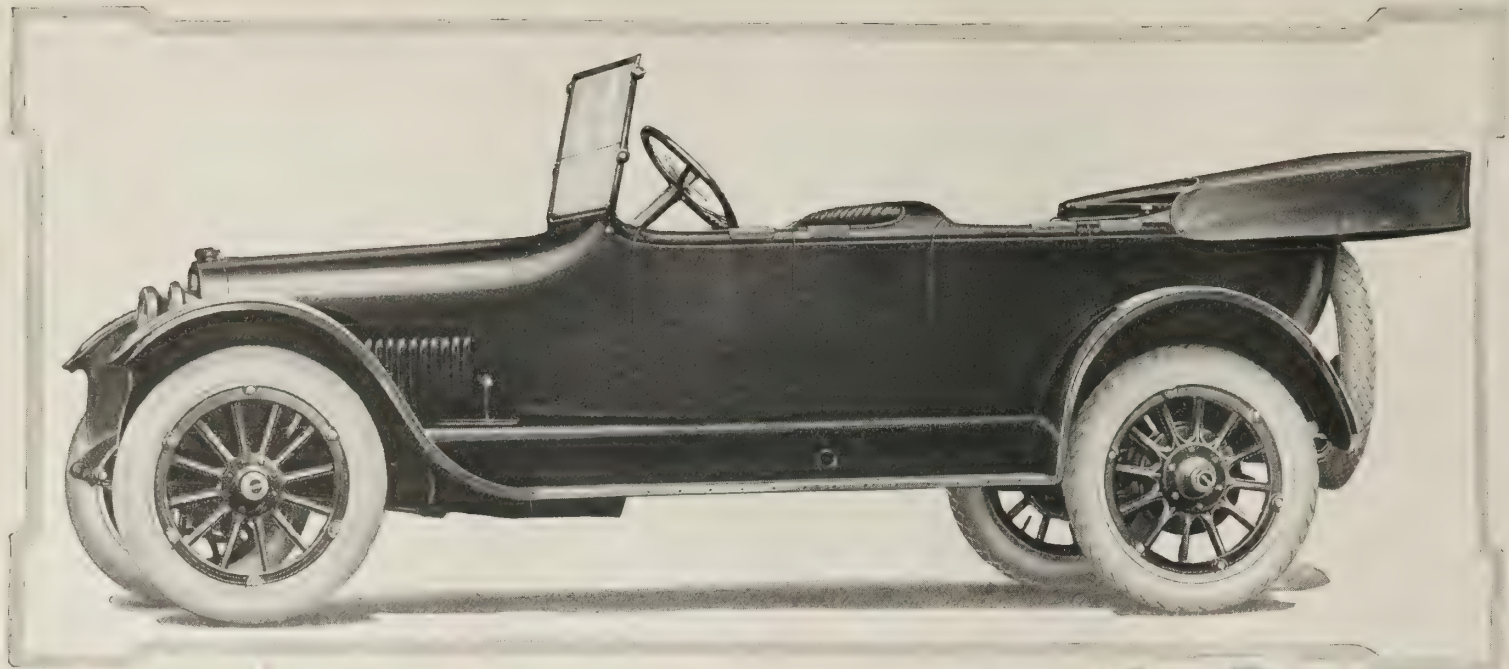
Every one of the hundreds of drop forgings used in Buick cars is thoroughly heat treated before use, and the high standard set for the various heat treating operations is constantly maintained by close co-operation between the engineers and the heat treating experts.

WITH heat treating equipment and methods such as are found in all Buick heat treating departments, great uniformity in the quality of the finished parts is assured. And because heat treating raises the elastic limit (working load) of the steel to a really wonderful degree, it is possible by the use of heat treating to actually reduce the weight of hundreds of working parts at the same time that their strength is being increased. A series of exhaustive tests in the engineering department determines the maximum strain that a given part will encounter in service, to which is added a liberal margin for safety's sake. A part that is not overloaded should wear for an indefinite length of time, because as long as the critical point is not reached it may be subjected to strain millions of times without injury.

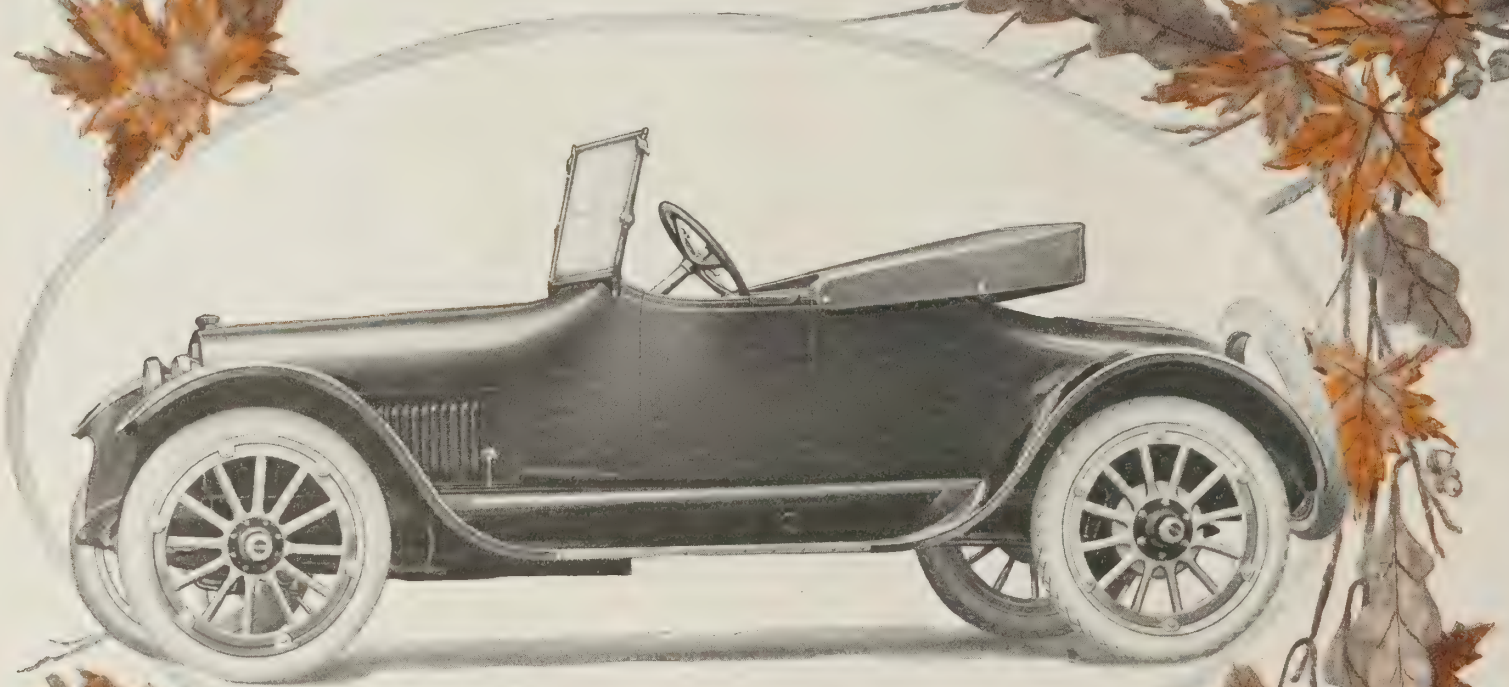
So, in addition to the tests given in the manufacturing departments, a certain percentage of each lot of heat treated parts is tested in the engineering laboratories, to see that production is running uniformly in accordance with specifications.



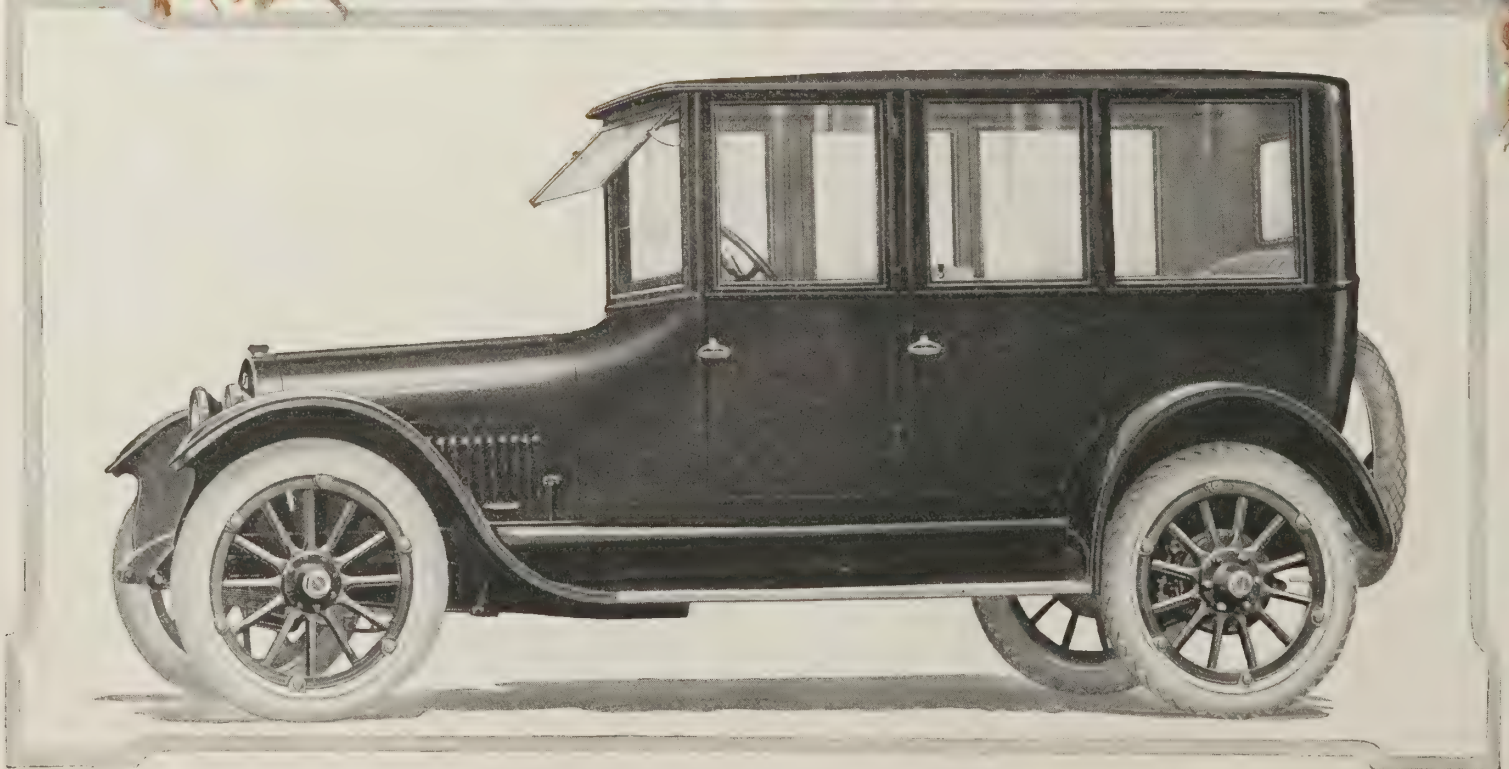
Rolling mill for rolling the taper on Buick driving axle shafts, instead of machining the taper.



Seven-Passenger Open Model H-Six-49
Price \$1,885.00



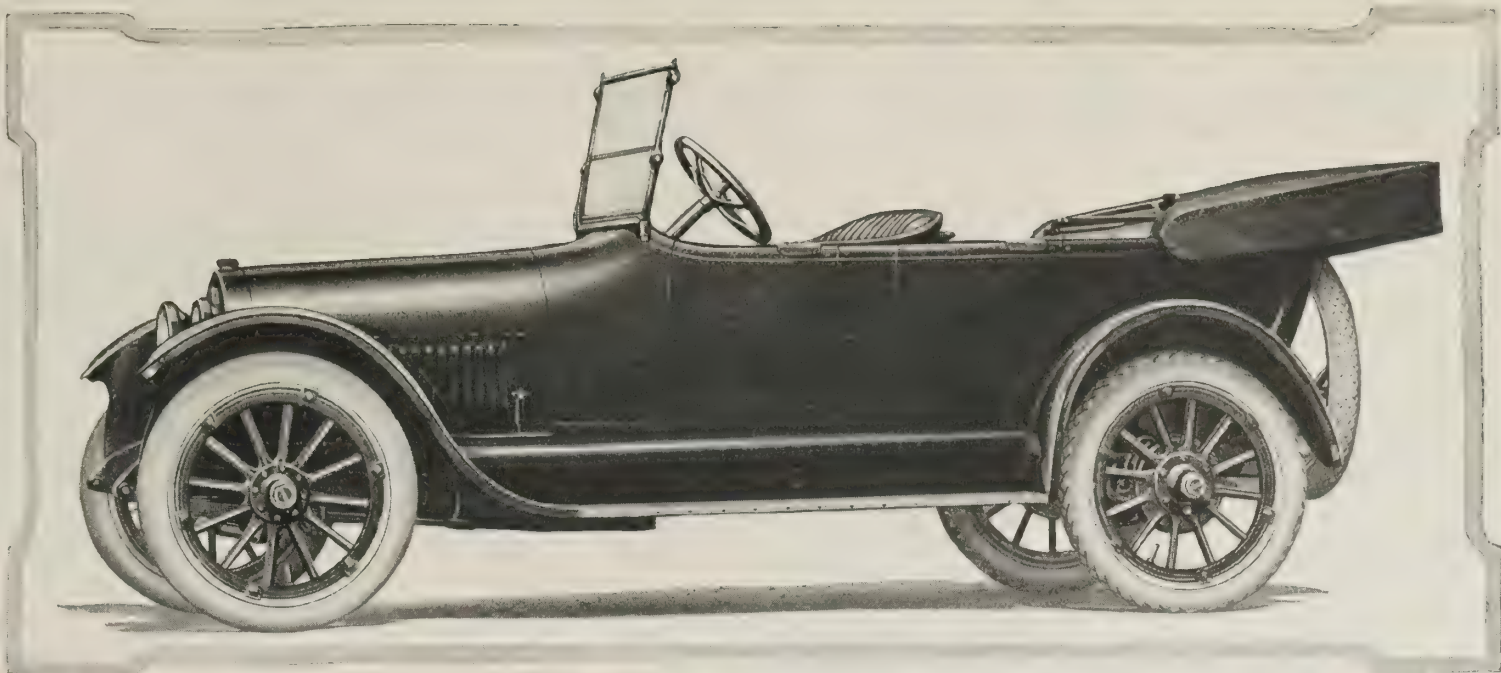
Three-Passenger Open Model H-Six-44
Price \$1,595.00



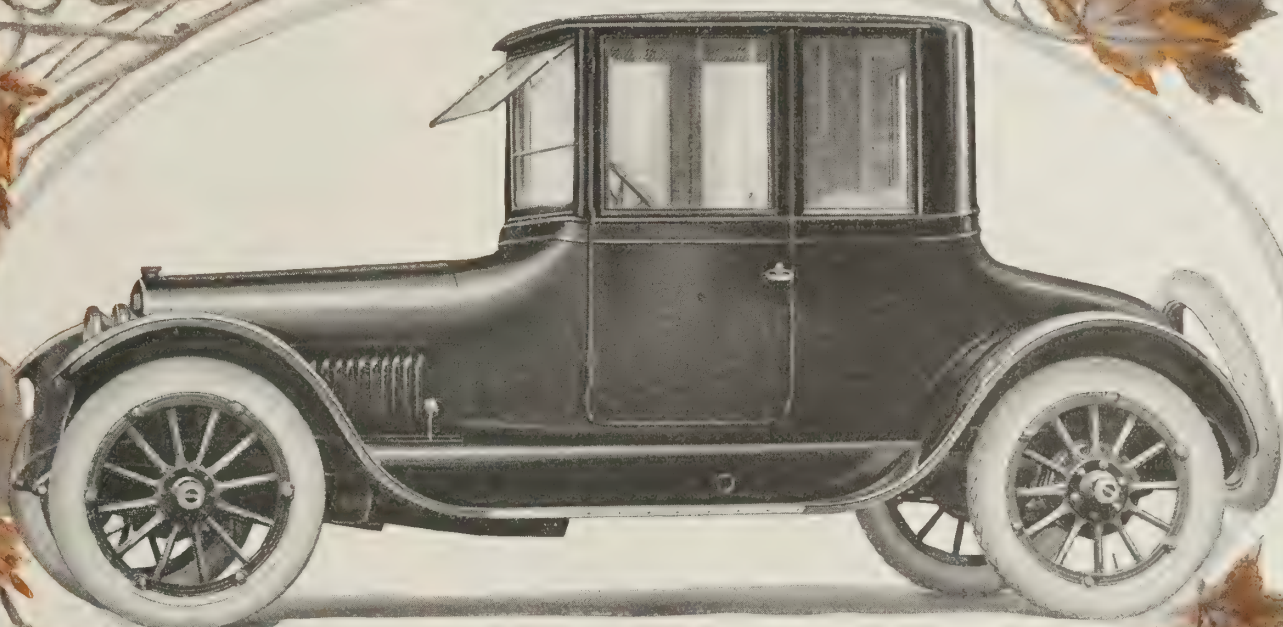
Five-Passenger Closed Model H-Six-47, Price \$2,195.00

BUICK Auto Valve-in-Head the nineteen-ninth another stage in Buick cars for a "Built for business" most aptly described parts of all six thoroughly proven motor has been development of matic lubrication other chassis considered more efficient constructive line The option of surprising open enables the buyer selection best needs, including passenger capacity meet varying

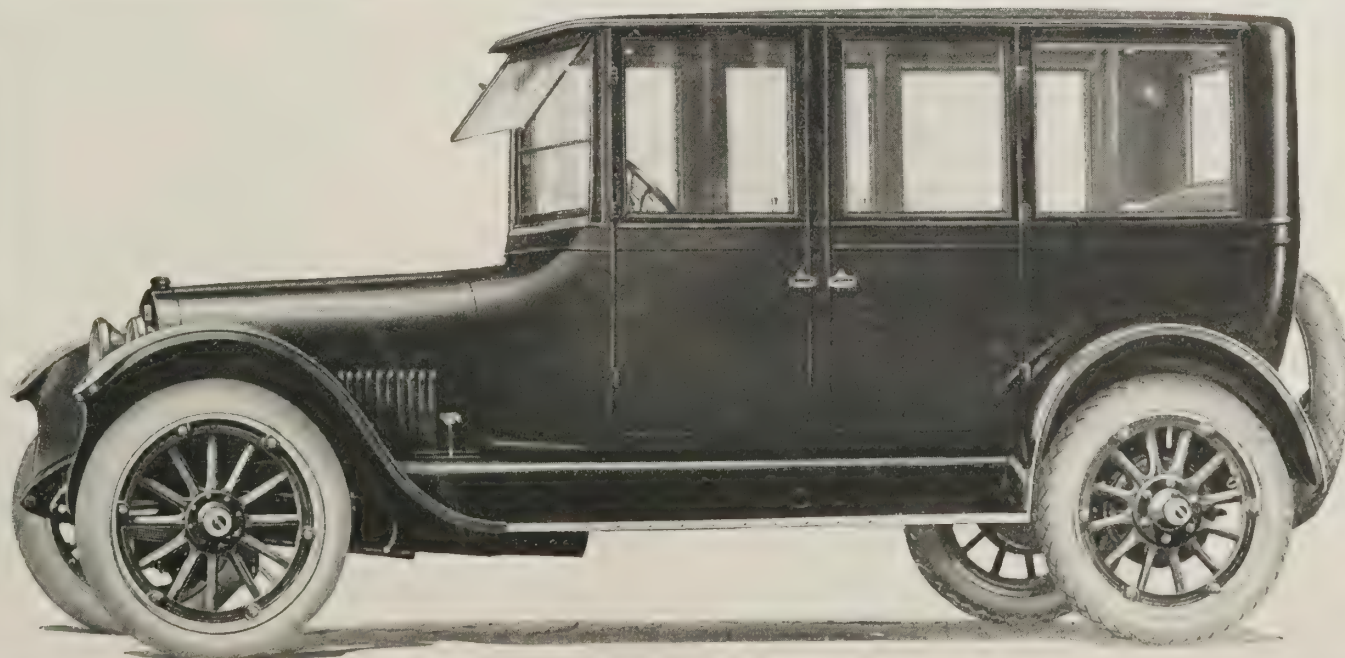
B



*Five-Passenger Open Model H-Six-45
Price \$1595.00*



*Four-Passenger Closed Model H-Six-46
Price \$2,085*



Seven-Passenger Closed Model H-Six-50, Price \$2,585.00

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Motor Cars for
teen season mark
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is the phrase that
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models. The thor-
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Pick

Iowans Boost Buicks for Business



J. W. Calhoun lives in Ottumwa, and operates the Eldon Telephone Co., at Eldon, Ia. "I use my Buick every day going to and from Eldon and Ottumwa and in running the telephone lines. It gives the most efficient service of any car I ever had."



"In purchasing walnut logs for the Government I drive some 15,000 miles a season. I consider the Buick the best car for business purposes and uninterrupted service I could own."—Alva Garrett, Keokuk, Iowa.



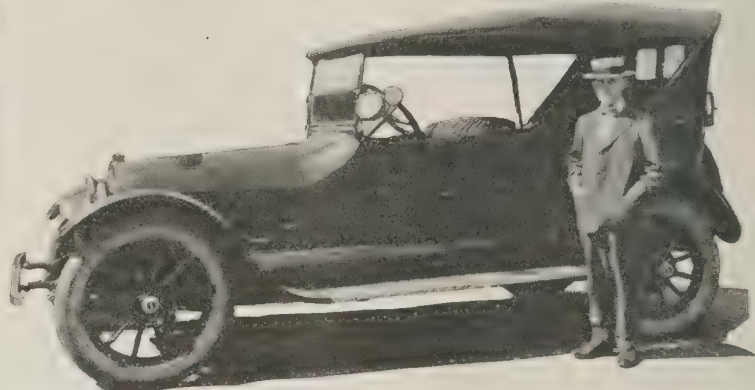
"I use my E-49 Buick in my undertaking business and find it reliable at all times."—W. C. Clements, Keokuk, Iowa.



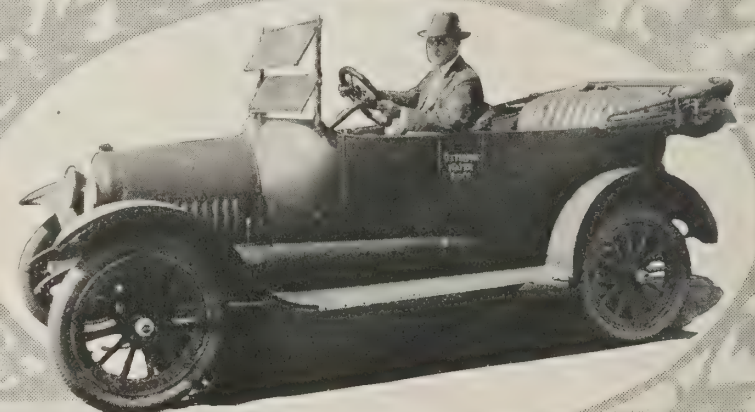
"The farm which I operate is six miles from the city, and the drug business in the city. They have been thoroughly managed by use of the Buick, which has proven to be a good investment."—W. H. Mynard, Ottumwa, Iowa.



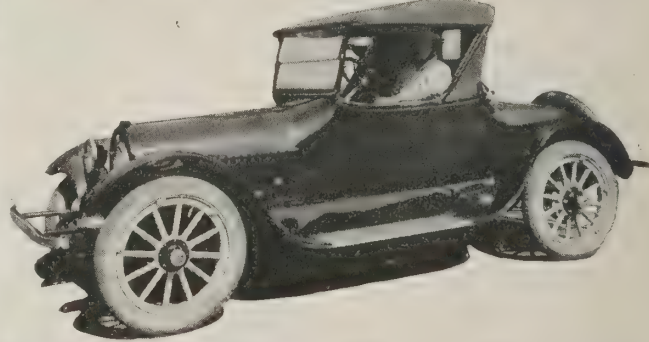
Fire Chief's Buick Roadster fitted with large and small chemical tanks, Ottumwa, Iowa. This car has served for nine months without trouble of any kind. It was equipped by the Davis Auto Co., Buick dealers.



C. E. Fahrney, Manager of the Ottumwa Railway and Light Co., writes: "This car was purchased eight months ago, to be used as a Manager's business car. We are very well pleased with it."



Horace A. Brown, Superintendent of the Ottumwa Water Works: "We purchased this car in the spring of 1917 and have used it continuously. We believe it to be the best car on the market regardless of price, for uses such as ours."



J. L. Adams, Sales Manager, Dain Mfg. Co., of Ottumwa, Iowa: "This is the third Buick I have owned. I believe I am safe in saying that the Buick is the best business car on the market."



W. J. Sutton, plumbing contractor, Keokuk, Iowa: "My car is in use every day for business purposes. It is particularly useful in transferring men and materials from one job to another."

Buick Cars and Faces, Old and New



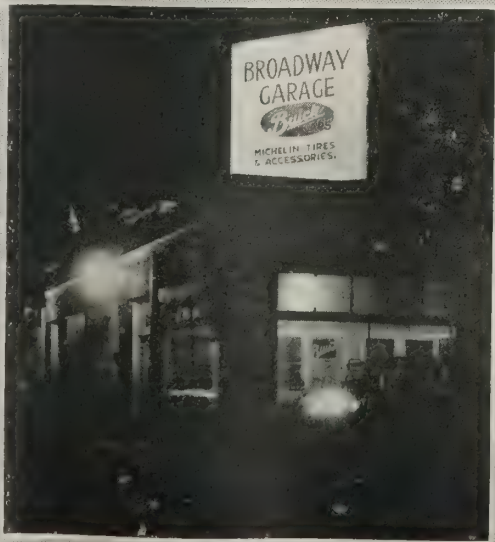
The first Buick car in this picture was driven from the factory to Woodstock, Ill., in 1904, and covered 200,000 miles in the livery business of C. Beardsly & Son. Nos. 2 and 3 are 1906 models, owned by C. F. Thorne and Fred Weltzien, respectively.



Mrs. George Rockwell and her daughter, Frances, operate two farms in the vicinity of Galesburg, Ill., by the use of their Buick Sedan. The car has been driven more than 12,000 miles and they are highly pleased with it.



This car was driven from the factory to Ringwood, Ill., in May, 1907, and delivered to the owner, Mr. John Carry, by the Buick dealers at Woodstock, Messrs. Schuett and Schaaf.



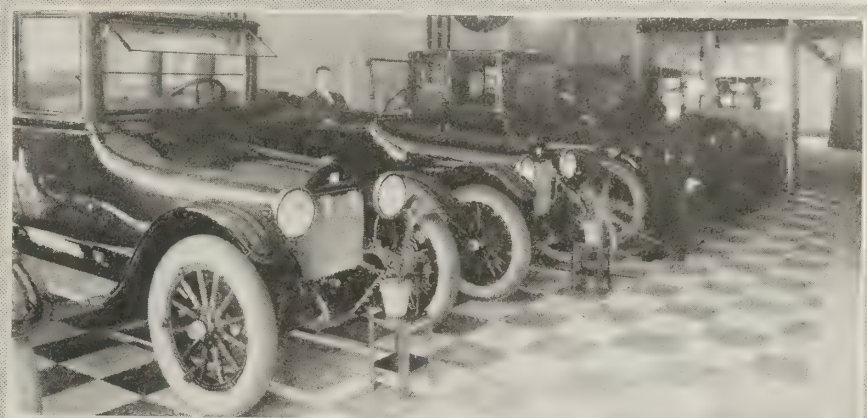
Motorists in Shawnee, Oklahoma, have no trouble in locating the Buick dealer. The Broadway Garage has 100 feet front and 190 feet on the side street.



This party of early Buick owners came to Flint in June, 1909, and each drove his own car through to his home in Woodstock, Ill.



Mr. Harry Locke, of Los Angeles, makes good roads maps with the aid of his Buick car. This picture of the inseparable pair was taken in the petrified forest of Arizona during one of Mr. Locke's long trips.



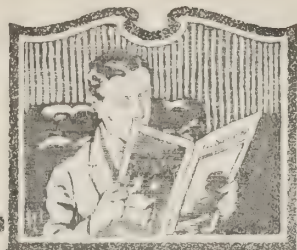
Mr. A. B. Shetter, of Middletown, Ohio, is an energetic Buick dealer and the proud proprietor of this modern sales and service establishment. Mr. Shetter puts most of the emphasis on the service.



The Linville family of Skidmore, Missouri, are bankers and farmers. By the use of their five Buick cars they are able to manage an extensive banking business as well as a farm of 1800 acres.

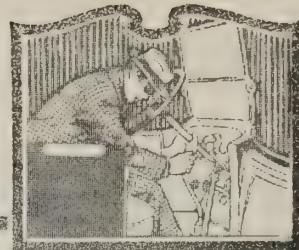


This picture was contributed by Mr. N. C. Tuxbury, of Cape Colony, South Africa, and was taken during a 3000-mile trip through the country. Note the long stretch of good, level highway.



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Adjusting the Carburetor

THE standard adjustment of the carburetor which will give the maximum mileage with the best all around driving, is as follows: The gasoline needle valve at the bottom of carburetor (3) should be open approximately one full turn, and the end of the air adjusting screw (5) just above the float bowl, should stand flush with the end of the ratchet spring (4). To get this result, adjust as follows:

Turn the gasoline needle valve on bottom of carburetor (3) to the right until it stops, and then turn back to the left one complete turn. Make sure that the air adjusting screw (5) is flush with the end of the ratchet spring (4).

With dash adjustment (6) turned to "Hot," start and run motor until the intake manifold feels warm.

Retard the spark and close the throttle on steering wheel gradually until the motor idles. If motor tends to stop when the throttle is closed, either the throttle idling screw (7) is not screwed in far enough, or the air adjusting screw (5) must be screwed in farther.

To get a good idle of the motor, adjust throttle idling screw (7), and also adjust air adjusting screw (5) as loosely as possible without making the motor miss or run rough.

To test the above adjustment, the motor should accelerate from an idle as follows:

With advanced spark it should accelerate without a back fire on both hot and cold air.

With retarded spark it should accelerate on hot air without a back fire, but should back fire when accelerated on cold air.

These accelerations should be tried several times to make sure of the adjustment.

If the motor does not back fire with retarded spark and cold air, the carburetor is set too rich and this can be

In the September issue of the Buick Bulletin, on page 12, an article was written on the subject of "Adjusting the Front Wheels."

In giving directions for checking the toe-in, an error was made by stating that (A) should be about $\frac{3}{8}$ " greater than (B), and in reality this should be (B) should be about $\frac{3}{8}$ " greater than (A).

remedied by turning the needle valve (3) to the right and at the same time tightening the air adjusting screw (5) to keep the idle until above conditions are met.

On the other hand, if the motor back fires on advanced spark and cold air, the carburetor is too lean and may be made richer to meet the above conditions by turning the needle valve (3) to the left and loosening the air adjusting screw (5) to keep the idle.

The carburetor should be checked frequently to see if the above conditions are being obtained and the temperature of the air entering the

carburetor should be regulated to give the desired results while driving.

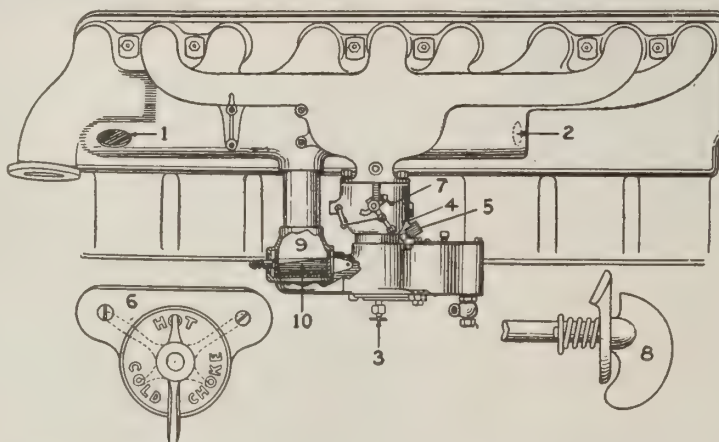
In starting the motor, turn the dash adjustment (6) to "Choke" until the motor starts, and then turn it immediately to "Hot." It should be left at "Hot" only long enough for the motor to become well warmed up, when the dash adjustment should be turned to "Cold" and left in that position. These directions apply to normal temperatures and weather conditions, and the driver will soon learn to handle the dash adjustment to take care of colder temperatures. For example, on a very cold winter day it may be necessary to drive with the dash adjustment turned somewhere between "Hot" and "Cold" all the time, the exact position to be determined by finding out where the most satisfactory performance of the motor is secured. The adjustment should be kept as near "Cold" as good performance permits.

When the dash adjustment is turned to "Choke," both the hot and cold air inlets are shut off and only enough air enters to make a combustible mixture at a low temperature. This mixture is entirely too rich for driving.

When the dash adjustment is turned to "Hot," the carburetor is fed with hot air from the chamber around the exhaust manifold, entering at points (1) and (2). This gives a satisfactory mixture while the car is warming up.

When the dash adjustment is turned to "Cold," the carburetor draws its air from the outside, and if the carburetor itself is properly adjusted gives the right mixture for ordinary driving temperatures.

Turning the dash adjustment to a position somewhere between "Hot" and "Cold," on cold days, may be done in such a manner as to feed the air to the carburetor at about the same temperature as the outside air in warm weather, thus assuring a mixture that affords both performance and economy.



1 and 2—Air intakes. 3—Needle valve. 4—Air adjusting screw. 5—Air adjusting screw. 6—Dash adjustment turned to "Hot." Dotted lines indicate positions for "Cold" and "Choke." 7—Throttle idling screw. 8—Side view of dash adjustment. 9—When dash adjustment is turned to "Hot," hot air from the exhaust manifold enters the carburetor here. 10—When dash adjustment is turned to "Cold," the valve raises to cover the hot air port and this cold air port admits cold air to the carburetor. When the dash adjustment is turned to "Choke" both these ports are closed, leaving only a small opening to admit air enough to make an extremely rich mixture.

BILLY'S TENDERFOOT

Continued from page four

spring the moment the man's guard lowered. It did not lower. The huddled figure on the floor reminded them of what might happen. They obeyed.

"Step back!" commanded the stranger next. In a moment he had them standing in a row against the wall, rigid, upright, their hands over their heads. Then, for the first time, the stranger moved from his position by the door.

"Call her," he said to Billy—"the girl."

Billy raised his voice. "Nell! O, Nell!"

In a moment she appeared in the doorway at the foot of the stairs, without hesitation or fear.

"Would you just as soon, ma'am, if it ain't troublin' you too much, just sort of naturally untie Billy?" requested the stranger.

She did so. The hotelkeeper stretched his arms.

"Now pick up them guns, please."

The two set about it.

"Where's that infernal old reprobate?" howled Billy suddenly, looking for Charley.

The patriarch had quietly slipped away.

"You can drop them arms," advised the stranger, lowering the muzzles of his weapons.

The stranger suddenly picked up one of the Colt's single-action revolvers which lay on the floor, and holding the trigger back against the guard, exploded the six charges by hitting the hammer smartly with the palm of his hand. In the thrusting motion of this discharge he evidently had design, for the first

six wine glasses on Billy's bar were shattered. It was wonderful work, rattling fire, quicker than a self-cooker oven.

The stranger dropped the smoking Colts and quietly reproduced his own short-barreled arms from his side pockets. Billy broke the spell at last.

"That's shootin'!" he observed with a sigh.

"The fifty thousand is outside," said the

stranger. "Do you want 'em?" There was no reply.

"I aims to pull out on one of these here bronses of yours," said he. "Billy, he's all right. He doesn't know nothin' about me."

He collected the six-shooters from the floor.

"I just takes these with me for a spell," he remarked. "You finds them, if you looks hard, along on th' trail—likewise your bronses."

He backed toward the door.

"I'm layin' for the man that sticks his head out that door," he warned.

"Stranger," called Black Hank, as he neared the door.

The little man paused.

"Might I ask your name?"

"My name is Alfred," replied the latter.

Black Hank looked chagrined.

"I've heard tell of you," he remarked.

The stranger's eye ran over the room and encountered that of the girl. He shrank into himself and blushed.

"Good night," he said hastily, and disappeared. A moment later the beat of hoofs became audible as he led the bunch of horses away.

For an instant no one spoke. Then Billy: "Hank, I means to stand pat with you; but you let that kid alone or I plugs you!" Billy was the only man armed.

"Kid!" grunted Hank. "Alfred a kid! I've heard tell of him."

"What have you heard?" inquired the girl.

"He's the plumb best scout on the southern trail and the best pistol shot in the West," replied Black Hank.

UNITED WE SERVE

Y. M. C. A. . . . Y. W. C. A.

National Catholic War Council—K. of C.

Jewish Welfare Board

War Camp Community Service

American Library Association

Salvation Army

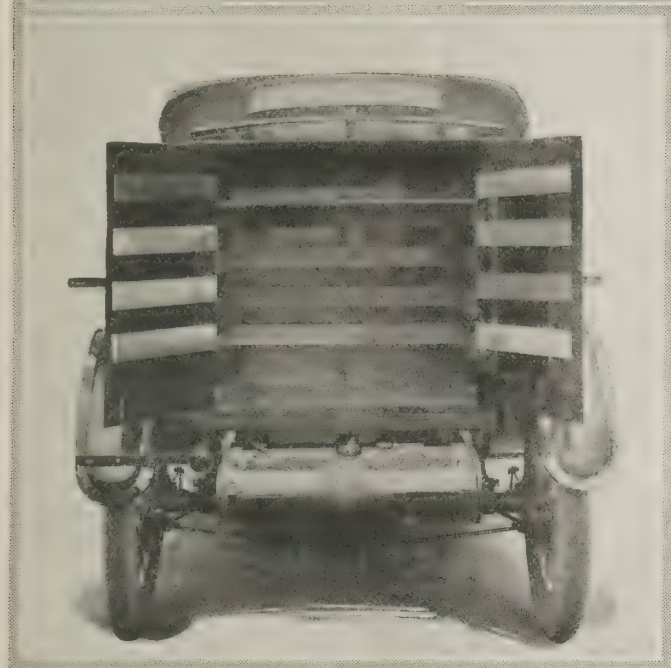
United War Work Campaign

November 11-18, 1918

\$170,500,000

For the Boys Here and Over There

Selling Goods with the Buick



LARGE business institutions throughout the country have found the motor car indispensable for the use of their selling forces, particularly where their goods are marketed through a large number of dealers over a wide territory.

The Du Pont Company is a notable example. In addition to their extensive pro-

duction of munitions, they manufacture a broad line of products that are useful both in manufacture and agriculture. So there is no section of the country which they can afford to leave unworked.

After many years of experiment with various methods, they have equipped their selling forces with Buick Roadsters, fitted

with a special compartment at the rear for carrying a complete line of samples. Sixty of these cars are already in use, and the number is being increased as fast as they can get the various territories organized properly. The only change necessary is altering the rear deck of the car to accommodate the box.



This Model 17 Buick covered 40,000 miles in livery work up to 1913, when it was sold to another livery concern which used it three years more. It has been used since by the Sheffield Farms Co., Inc., of Hobart, N. Y., to haul this skimmed milk tractor—weight 9,400 pounds.



When the Delco-Light salesman calls at a farmhouse, he is ready to demonstrate how that house can be lighted through the medium of Delco-Light. All that is necessary is to start the Delco outfit going, without removing it from the car, give the desired demonstration and, when finished, drive on to the next house.

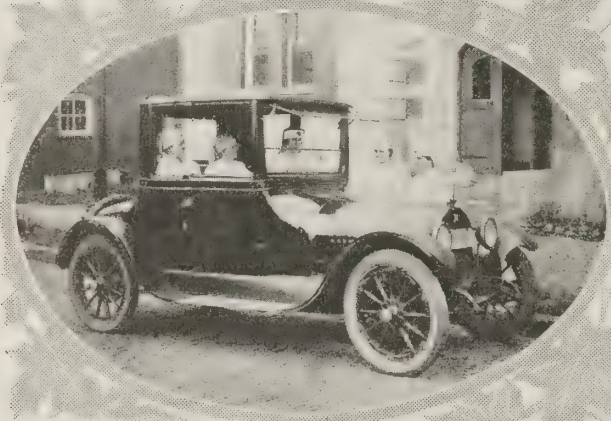
THE BUICK AIDS HUMANITY'S CAUSE



The Kaiser has more enemies in more countries than any man that ever lived. This picture shows the Shanghai Volunteer Corps in a patriotic demonstration in Shanghai, escorting a tank mounted on a Buick chassis by the Shanghai Buick dealers, Messrs. H. S. Honigsberg & Co.



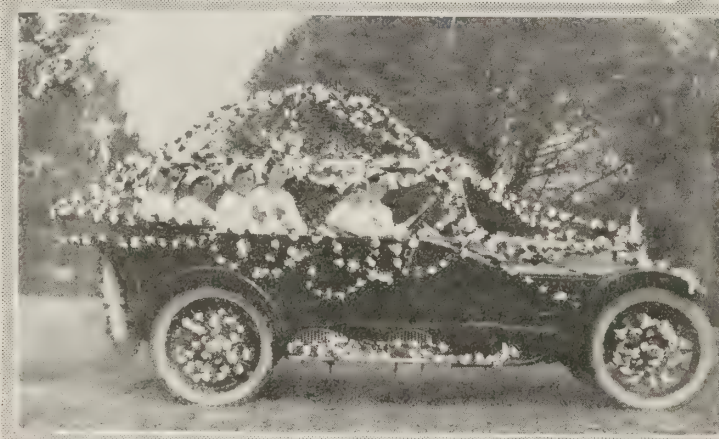
Corporal Walter J. Baker gets the Buick Bulletin "Over There." "After I finish with it," he writes, "I turn it over to other ardent Buick lovers and they too appreciate it very much. Keep turning them out." Corporal Baker is with the 2nd Construction B. L. Co., at London.



Women Buick owners the country over are using their cars to excellent advantage in patriotic work of all kinds. Mrs. T. F. Birmingham, of Galesburg, Ill., drove her Buick coupe every day last winter, spring and summer in the interest of Red Cross work.



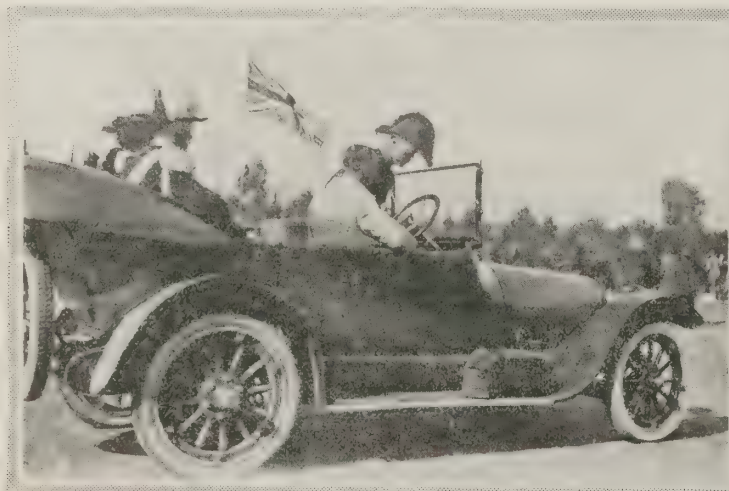
Mr. J. C. Hitchman, of Santo Domingo, sends this picture of a Buick car in the recent Red Cross parade there. Mr. Hitchman, in addition to being the Buick dealer, is president of the Bank of Santo Domingo.



This car was decorated and driven by the Muswellbrook Branch Red Cross Society for the Red Cross Day competition at Muswellbrook, New South Wales, Australia. It took first prize, as well as the only other car prizes offered—reverse race and musical chairs. The car is owned by the Buick dealers there, Messrs. Rennie and Stewart.



Mr. and Mrs. L. P. Northrup carried away first prize with their decorated Buick car in the Fourth of July parade at Woodward, Okla., and then donated the money to the Red Cross. Mr. Northrup represented Uncle Sam, Miss Merle Hudson posed as the Goddess of Liberty and Mr. Leo Fuller dressed as George Washington.



Lord and Lady Buxter and the Resident Commissioner of Basutoland, South Africa, use this Buick car continuously. The picture was submitted by Messrs. G. North & Son, Buick dealers.



Here are two more Buick Valve-in-Head tanks, built by the Leyman-Buick Co., of Cincinnati, to help in the sale of Liberty Bonds in that city. Mr. Leyman is chairman of Team U, which raised \$6,000,000 in the last drive.



Farm Life Today is vastly different than it was twenty years ago. The change is due in no small measure to the motor car, which has made the farmer and his family active forces in every community, instead of being practically isolated for weeks at a time.

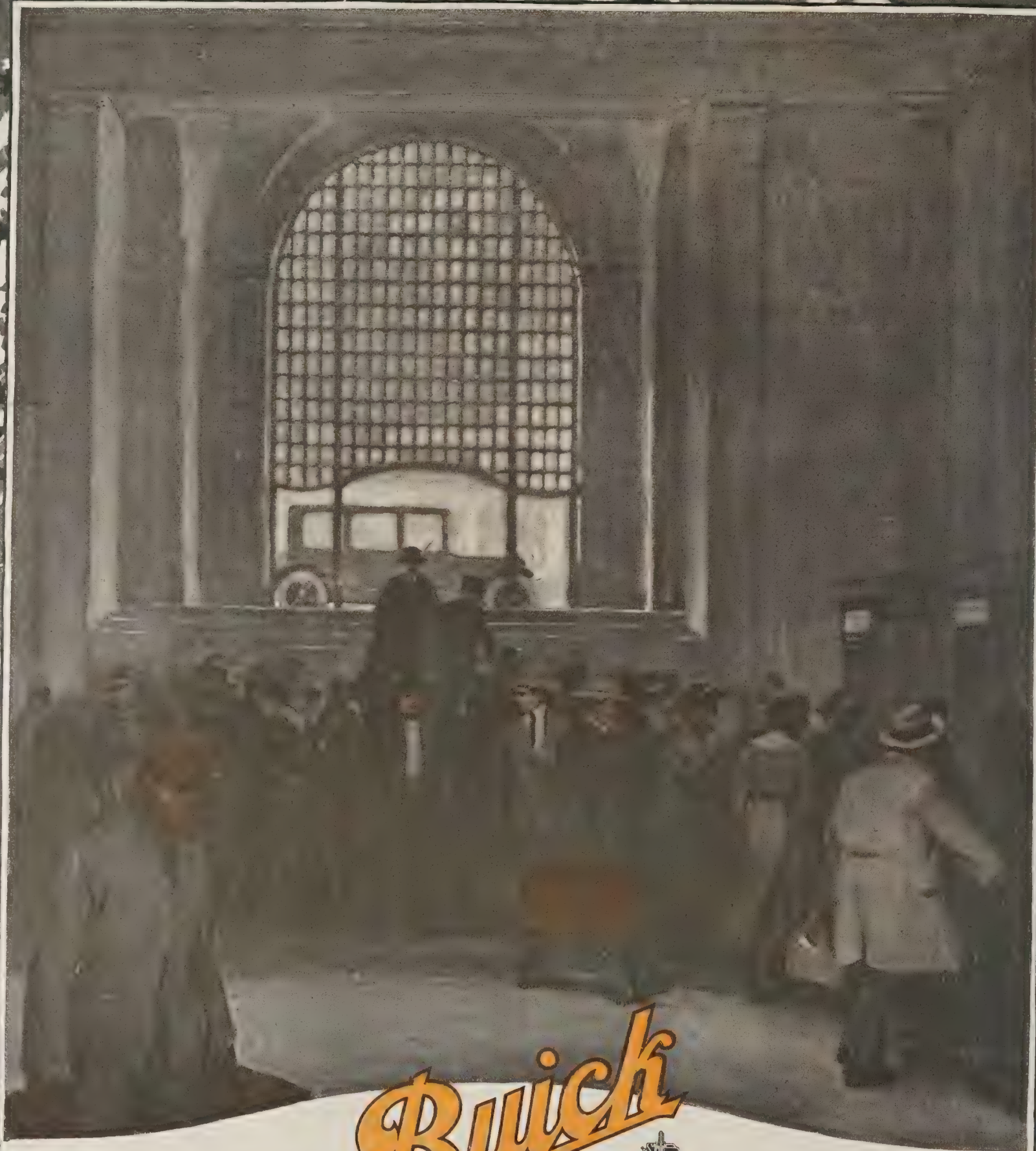
The farmer's car must serve in every capacity. It must be ready for use at any season, powerful enough to carry a heavy load of supplies if need be and good enough to act as the family turnout.

The sound construction and high quality of Buick cars fit them for the hardest kind of all-around service. That is why Buick cars have been used in overwhelming numbers in rural communities for nearly twenty years.

Buick Motor Company, Flint, Michigan

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities — Dealers Everywhere



EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK

You Can Make Your Schedule—with a Buick!

You can catch your train or catch your man. You can lay your plans for the busiest of days with the care-free assurance that you can carry them out, no matter if they require your presence in a dozen parts of the city. Nearly twenty years of development have given Buick Valve-in-Head motor cars a tremendous asset from a business standpoint—the faculty of performing under all conditions with clocklike consistency.

Buick Motor Company, Flint, Michigan
Pioneer Builders of Valve-in-Head Motor Cars

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THE *Buick* BULLETIN

Published by the Sales Department
of
Motor Company

NOVEMBER 1913

FIVE CENTS A COPY



H.M. MORAN.

In this issue—"THE EMPTY HOUSE"—by Owen Oliver



Keep the Home-fires Burning

*Keep the Home-fires burning,
While your hearts are yearning,
Though your lads are far away
They dream of Home;*

*There's a Silver lining
Through the dark cloud shining,
Turn the dark cloud inside out,
Till the boys come Home.*

Published Monthly
in behalf of
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Everywhere

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THE BUICK BULLETIN

A Magazine of Motor Interest

E.T. Strong Managing Editor

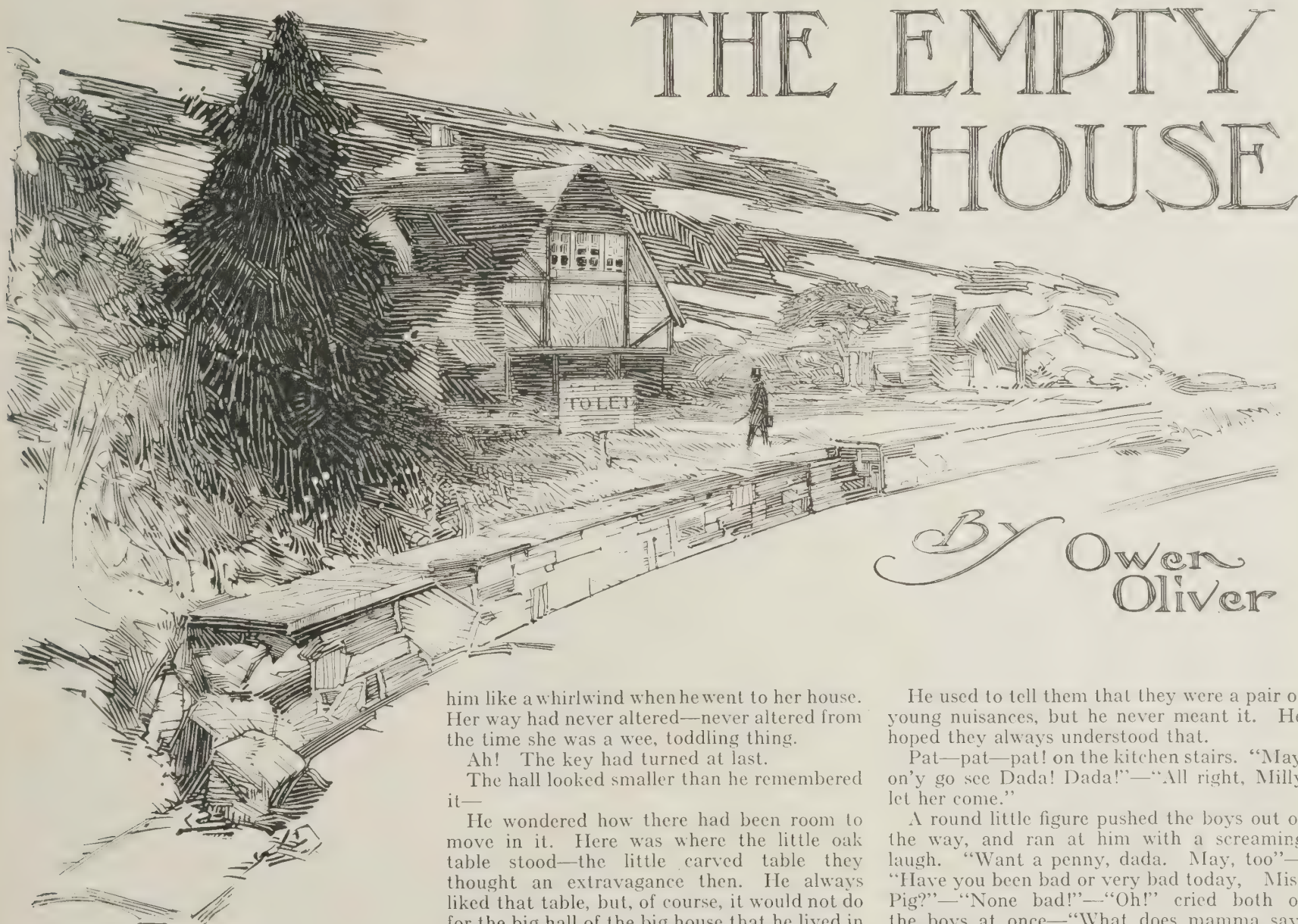
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Volume Seven

Flint, Michigan, U. S. A.

Number Eleven



THE EMPTY HOUSE

By Owen
Oliver

HE had not been particularly fond of the house when they lived in it and he could not make out why he had asked for the key. It was just a fancy that came into his head when he saw it standing empty. The agent happened to live right opposite and he had acted on the impulse.

The house had been vacant for a good while, it seemed. The grass had grown over the path and there was moss in the corner of the steps. The key grated in the lock and would not move at first.

It was always a troublesome door to open. Vi used to rush up-stairs like a hurricane to unlatch it before he could turn the key. The key generally turned when she was at the far end of the passage, but, of course, he pretended that it had not. It was so good to hear her laugh at him and to see the sparkles in her eyes. She wore short dresses then and her hair was down her back. Her hair had been up these five years—five? No, it must be seven; there was a big-eyed baby Vi now. Thank God. Vi's eyes still sparkled, and she still rushed at

him like a whirlwind when he went to her house. Her way had never altered—never altered from the time she was a wee, toddling thing.

Ah! The key had turned at last.

The hall looked smaller than he remembered it—

He wondered how there had been room to move in it. Here was where the little oak table stood—the little carved table they thought an extravagance then. He always liked that table, but, of course, it would not do for the big hall of the big house that he lived in now. He must ask what had become of the table; he had not seen it for years. He always kept matches in the right-hand drawer. Bert and Alan used to steal them. They were only little fellows then. Such little fellows! And now they would soon be men. Bert was going to Oxford next month, and Alan was taller than his father. They had done very well at school. They were good boys—good boys! What dreadful little pickles they were then. He could almost fancy that he saw them.

The empty house was empty no more as he looked around.

Two small imps were peeping round the top of the basement-stairs; a keen, brown-eyed face, and a good humored, blue-eyed one. Two eager voices were in his ears: "Can't we have a penny for fireworks tonight, dad, 'cause we didn't have one yesterday, and I went up four places in Latin last week."—"An' I've got to 'bonus' an' that's very good for me—" "We could get better ones if you gave us a penny each. Mamma said perhaps you would if we didn't bother till you'd got your coat off—Well, you've got one arm out—"

He used to tell them that they were a pair of young nuisances, but he never meant it. He hoped they always understood that.

Pat—pat—pat! on the kitchen stairs. "May on'y go see Dada! Dada!"—"All right, Milly let her come."

A round little figure pushed the boys out of the way, and ran at him with a screaming laugh. "Want a penny, dada. May, too"—"Have you been bad or very bad today, Miss Pig?"—"None bad!"—"Oh!" cried both of the boys at once—"What does mamma say. I wonder?—No, no, boys! No tales—well, I'll see. You'll send me to the workhouse soon. You won't get any pennies then—and where is Dolly?"

Dolly would be in the drawing-room reading. She ought to be practicing, of course, but she preferred a book. She was too absorbed to look until he bent down and kissed her. She had a quick smile for him then. She always had a smile for her father, even when she was a baby. She used to cry after him before she could walk. She could say "dada" when she was barely five months old, and she could say one hundred and seventy-three words when she was seventeen months. He made a list of them—he laughed softly at himself for remembering such a trivial thing.

Her baby was very like Dolly used to be, very like; only not quite so pretty to his mind. Dolly was his first child—the first child is the wonder of wonders always—still a child to him, though she was a woman and a mother. But he was back in the old drawing-room, and Dolly was back at fifteen years—and Bert had snatched her book and was dodging her round

the ottoman—his own voice sounded young in the ears of his memory.

"Come, come, boys!" his young voice said. "What will your mother say if she finds you've been in the drawing-room in those dirty boots? Give them another wipe then. What is that down in the garden?—A roman shield, eh? It looks to me like the copper-lid—eh, Milly? Dinner? All right. You can take Miss Maisie—"

But May held to his big leg, and began rubbing one fist in her eyes. "Oh, very well! She can stay if she's very good—Come on, piglet. What! Carry a big girl like you! Only 'little big,' eh? Up you come, then! Now, boys, get those lessons done while I have dinner. Ye-es. You can do them at the other end of the dining-table, if you're very still and quiet. Fireworks? We'll see about them when the lessons are finished. I dare say Vi will get them for you. She'll pass for thirteen. Now for that 'quiet dinner' mother and I were to have."

Somehow he never did have a quiet dinner in those days. The children were so young—He was younger then. Ah! He shrugged his shoulders impatiently. People must grow older; and he was not really old. Just old enough to have come to his full powers and earned success.

His time was precious now-a-days. He could only spare a few moments for a look round the house. It was an absurd fancy—a ridiculous fancy!

He started at the sound of his footsteps in the empty house as he began to climb the stairs.

The boys used to slide down the banisters; and the girls!

This was the boys' room—

How pleased they were to have a room for themselves, when they moved here. He let them choose their own pictures out of those degraded from the former dining-room. He had expected that they would select the gaudy ones, for which he had no other use; but their taste was unfortunately good. They persuaded their mother to buy plaster figures for the mantles shelf from a man who called—Queen Victoria and an Italian flower-girl. The flower-girl lost an eye when Alan first had a catapult; and Bert lent Queen Victoria to May for a doll, when she had measles—it never went back! What young scamps they were! But they had grown up fine fellows—fine, manly fellows!

The green shelf that he put up for their toys was still there, but it had been repainted.

He had meant it to be pale blue, not green; but it is easy to confuse colors by gas-light, especially when you have two little boys to help you. The stain was still in the boards where Alan upset the paint-pot.

He stood a long time looking down where their bed had been—

Most mornings he came in to stop a pillow-fight; or settle whose clothes were whose, they were so much of a size. Most evenings he came down from the study to adjust a difference concerning the sharing of the bed or the clothes, or to give them drinks of water, or fetch them biscuits, or tell them that they really must be quiet. They made a great deal of noise—but they were only little fellows. He always tried to allow for that.

He used to come in the last thing at night to see that the gas was turned off, and that the windows would not rattle. The boys were inclined to doubt whether the lions were safe in the Zoo, if they heard a noise in the night; and then, of course, they shouted for their father; it was always in the cold weather that they disturbed his slumbers. He felt very cross sometimes, he remembered; but he didn't give himself away by showing it. No one has any right to lose his temper with a child—Besides, they were frightened. And they were only little chaps. Such little chaps.

This was the nursery—

He always had to go in twice to bid May good-night; sometimes three or four times. "I shan't have any peace till you are grown-up, monkey!" he used to tell her. Now his baby was quite a big girl.

How the years had flown!

The elder girls' room was next to the nursery—

What bonny girls they were; and how they loved romping and fun! They used to make faces at him around their door, and he would lie in wait with the long dusting-broom. Once Violet was in an ambush up the stairs with a pillow. She missed him and hit the gas-globe. He told his wife that he had broken it. It was his fault, of course, for encouraging them to romp.

Sometimes he would put a booby-trap on the bath-room door to catch them in the morn-



Dolly had done up her hair and put on a last season's dress of her mother's. Violet had borrowed his overcoat and hat and a cigar to stick in her mouth.

ings. He rose earlier than the rest to write. He worked very hard in those days. There was need of hard work with so many mouths to fill. Thank Heaven he was still a busy man, but the need had passed. Work does not often bring its full reward, but it brings something—He was no longer a poor man, thank Heaven! He did not care very much for money, himself, but had always wished to leave a little for the children, when his time came—But his time was not up yet. No, no! Not yet.

This was his room, and his wife's—

She had a busy life then, but it had been an easy one these last few years. The reward of a man's labors comes first to his wife and children. He would not wish it otherwise—he did not wish for an easy life ever, he thought. There was always work for a man.

In this room he used to lie awake, and wonder how to make both ends meet. One—two—three—the hours struck so quickly one after another, he seemed scarcely asleep before the morning came—and May's "tap, tap, tap," at the door. When he let her in she would scramble into his place before he was back in bed. He would pretend to be very cross, and she would laugh! The baby laugh was missing from the house these many years. How she would laugh when the crocodile was eating her! The crocodile that was made of legs and bed

clothes! They were equally useful for making a camel, with a hump that vanished just as she was sitting down.

There was no sleep for him after May arrived. Her restless feet made a wonderful draught in the bed on cold mornings, and her tongue never ceased prattling. If he fell into a doze, she would beg for a story. "In a minute" he would protest sleepily, but she used to put her chubby arms around his neck, and kiss him with a soft, wet mouth—"You's a dear dada. Now tell May 'tory."—She was a big girl now, a big girl.

He went and looked thoughtfully out of the window.

Only Alan and May would be left at home, now Bert was going to the "Varsity." Alan would be going in a year or two; she would not stop long after him. Her impudent beauty caught men's eyes already. And when his baby went—

The street lamp, that was just lit, flickered unsteadily. There must be a mist on the window. No, it was on his spectacles. Well, well! He would go up to the old study, and congratulate himself on the improvement that he had made in that respect.

The study was right at the top of the house—one of the attics. It was too hot in summer, and too cold in winter; but his work had prospered there.

He remembered how he made the carpet for it, by cutting the last pieces out of an old one. Nothing was left of the furnishings of the room except the tall nest of drawers that his wife had given him. They were too good for the other things, they said then. Now she wanted to turn them out of his study because they were not good enough for the rest of the furniture, but he held to them. He was not given, as some are, to friendship with inanimate things, but he could not look upon these just as furniture. Sheaves of his writings had passed through them, the writings that were part of himself; that had changed as he had changed. Or was it as the children changed? There was always so much of the children in his stories. When

there were no longer any children they would be an old man's writings—an old man's writings. No, No! His heart would never be quite old while he had the memories. He would never lose these. They were with him now.

He turned to sit in the old chair; and found that the room was empty. The dusk was creeping over it and the corners were full of shadows. It was a room of shadows and corners, a room to think in—

He had sat there so often in the twilight thinking, thinking of the stories that he made; thinking of his own! Facing the things that a man has to face; no one can help him with some of them—no one.

It was here that he sat and faced his darkest hour. He had not liked to think of it ever since; he wiped his forehead as he thought of it now.

The daylight grew into twilight; the shadow of the window-frame came creeping toward him along the floor; the twilight deepened into darkness. There were whispering thoughts—evil thoughts—in the room. He could not escape them. He got up and lit the gas, to take refuge in light, and they whispered to him still. His thoughts went back to the depths. God forbid that we should follow them and pry into his memories. We all have our dark hours—all!

Suddenly the door burst open and the girls pushed one another into the room. They could hardly speak for laughing. He could hardly speak. He passed it off for laughter, too. Dolly had done her hair up and put on a last season's dress of her mother's. Violet had borrowed his overcoat and hat and a cigar to stick in her mouth. They spoilt the cigar, he remembered, and he had to have the hat ironed. He thought that they saved him. People see what children owe to their fathers. They do not see what their fathers owe to them.

(Continued on Page 12.)

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

IN discussing prices, it is too often the custom to pass them by with a wave of the hand and a vague reference to "supply and demand," or "on account of the war," or some other such general remark that is not at all enlightening.

Broadly speaking, the two factors that largely determine the price of a manufactured product are the cost of materials and the quantities in which the product is built. Particularly do these two main items apply to the prices of motor cars.

During the great war the material resources of the world were drawn upon as never before, and this caused such a shortage of the materials needed in building automobiles that it was necessary for all automobile manufacturers to curtail their outputs. In addition, the Government found that the motor car companies could be of invaluable service in the production of war materials and enlisted them wherever possible in this work, with the result that the close of the war found most of the automobile factories working on from seventy-five to one hundred per cent war basis.

THIS vast amount of war work naturally brought about a shortage of motor car materials and reduced the output—the two big factors governing the prices of manufactured products.

The war is now over, as far as the actual fighting is concerned. But war conditions are not yet over, as far as manufacturing conditions are concerned.

The whole world is still trembling on the brink of the new era of peace and prosperity which we all feel the future holds in store, but the readjustment which is essential before we can benefit by that new era is just beginning. The great industrial war machine that has been absorbing the interest and the efforts of the whole civilized world has got to be slowed down, stopped, turned around and started in the opposite direction. Until it gains new momentum in the proper direction, the cost of things will not come down to a normal footing.

THE Government, in removing all restrictions on the output of passenger cars, does not relieve the situation to any appreciable extent. The signing of the armistice and the removal of restrictions do not of themselves make any provision for immediately increased quantities of materials. These materials have got to be manufactured first, in quantities and according to such specifications as the requirements of the various motor car companies

demand. And the material situation is really a part of the great industrial machine above referred to, which has got to be organized to meet the needs of the industrial world.

SO far as the automobile industry is concerned, it must await the settling of this big, vital question of material before it can proceed intelligently. The manufacturing organizations have been held together more or less successfully, and because of their large production facilities they have been able to handle all the war contracts and at the same time turn out a certain quantity of motor cars throughout the period of the war.

But the material situation is still unsettled, and until it is settled and the managements of the various companies have had time to go into and analyze the situation thoroughly, get a concrete basis on which to let contracts for their future requirements, it will be impossible to revise prices with any degree of intelligence. When the material situation has been cleared up, it will call for certain readjustments. But at this writing it is doubtful if any manufacturer is able to look into the future far enough to properly establish his prices. Further, it is not possible to say right now whether some of them will be reduced, others increased, or whether some or all of them will remain as they are.

THE Buick policy in respect to price has always been uniform and fair. No Buick model was ever built "around a price." The various models have always been designed and built first, the cost of building ascertained and then a fair selling price established.

No attempt has been made to take advantage of any peculiar or extraordinary conditions, no matter how plausible a reason such conditions might lend to an increased price. When America entered the great world war, it will be remembered that no change was made in the price of any Buick model during the remainder of that season. The 1918 season began on July 1, 1917, yet Buick cars went on the market at certain prices and these prices were not increased any time during the next twelve months. Why? Because at the beginning of the season the Buick Motor Company had let its contracts for enough material to build its entire year's output and it was not necessary for them to advance the prices to purchasers of Buick cars.

The prices of the current Buick Valve-in-Head models are based on conditions as they existed during the past summer and fall, including the prices of raw materials and the Govern-

ment restrictions as to output of cars. And as far as all practical manufacturing considerations go, these conditions have changed but little to date. The uncertainty referred to earlier in this article still exists, and the coming of peace has not brought with it, as yet, any stabilizing of the material situation on which we can base an increased output or can figure definitely changed prices. We knew much better where we stood previously, when the Government definitely restricted our output and gave us priority on the material required to build that output.

BUICK current prices are honest prices, based on the cost of production. Like all other Buick prices, they were established after the most careful consideration and after full information regarding material and other costs had been secured. It is impossible to arrive at just prices without making such an analysis, and this practice is in conformity with good business methods everywhere. A fair price can only be based on the conditions under which a product is manufactured. At present, and for some time past, the conditions in all industries have been abnormal and will remain so until something like an industrial balance has been reached.

Buick cars at present prices are excellent values, and compared with other standard articles of commerce are surprisingly low in price. The Buick car of today is the best motor car ever turned out by the Buick Motor Company, and the high cost of good materials has not brought with it the slightest departure from Buick standards of excellence that have built up Buick reputation to its present high standing.

THAT would be manifestly unfair to the purchaser of a Buick car, who expects—and is entitled to receive—an automobile built as well as the long experience of the Buick Motor Company has taught it how to build that automobile.

It would be equally unfair to the purchaser of a Buick car to ask him to pay a price that would allow the Buick Motor Company more than a fair margin of profit. This has not been done in the past, during the war or at any other time. It will not be done in the future.

It is by following this principle of justness and fairness that the Buick Motor Company has achieved such high esteem among motor car buyers, and the continuation of this esteem will be assured only by adhering to this principle.

BUICK MOTOR COMPANY



THE Buick Motor Company is not merely one of the world's largest and best equipped motor car factories. It is the world's successful builder of Valve-in-Head motors and motor cars. Nearly twenty years have elapsed since the first Buick Valve-in-Head motor was built. Since that time the experience gained in developing this type of motor has reflected itself in the rapidly growing business and in the resultant growth of the factory itself.

When, in 1917, this country entered the great world war, there followed a vast mobilization of industrial resources, and both experience and equipment were taken into consideration in order that speed and efficiency might be attained in the mammoth production that was necessary in all branches.

It was therefore quite natural that when the question of building Liberty motors came up, the Buick Motor Company should be selected to build them, this being the field in which it could render the most effective service.

The Liberty motor is a Valve-in-Head motor, designed especially for aeroplane service by some of the world's leading motor designers. These designers applied themselves with great sincerity to the work, because it was to be the greatest of all the contributions of the motor industry of America to the cause of democracy. It possesses many characteristics of design that make it admirably suited to the purpose. Lightness, strength and extreme power are the outstanding features of this motor, and these results are secured by the liberal use of drop forgings, heat treated alloy steels and intelligent application of the Valve-in-Head principle of design.

The Buick Motor Company is admirably laid out for building such motors, because it has its own immense drop forge plant and heat treating departments, tool making departments, highly organized laboratories for chemical, physical and metallurgical work, and has had nearly twenty years' experience devoted exclusively to designing and building Valve-in-Head motors and cars.

It must not be supposed, however, that the Buick Motor Company was turned into a Liberty motor plant over night. The Liberty motor was larger than any motor ever turned out by Buick.

It had twelve cylinders instead of six and was proportionately large in every part. New tools, dies, jigs and fixtures had to be made and installed and each department of the huge motor plant arranged to take care of Liberty motors.

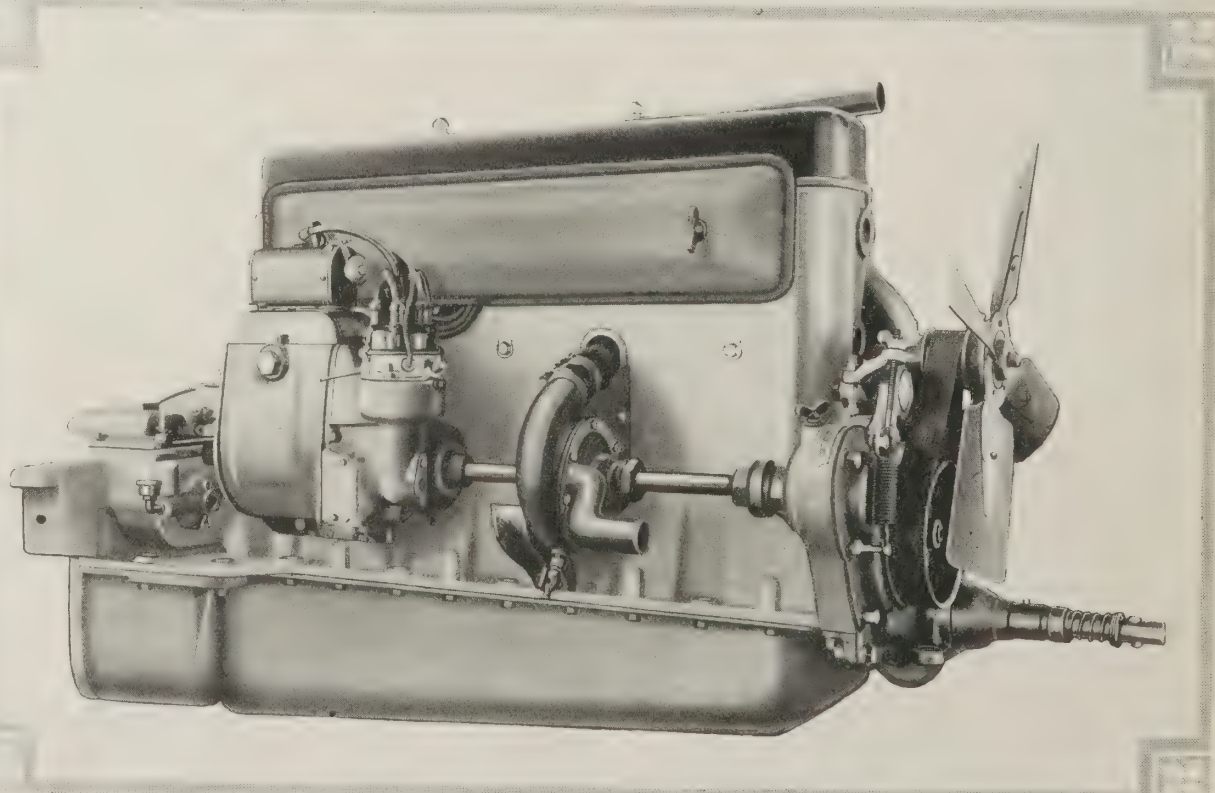
This work was done in a very short space of time, and the flexibility of the Buick factory was never better illustrated than in this accomplishment. It can all be explained by a brief description of the plan of organization of the factory, which in its way is quite remarkable.

The Buick factory is more than a mile in length, and varies in width from two to four city blocks. But in spite of its great size it is not at all unwieldy, as it would have been if it had grown in a haphazard manner by simply adding new buildings from time to time as one department and another outgrew its maximum capacity. This method has never been followed, and the expansion of the factory has been governed by a principle that has been adhered to as rigidly as the Valve-in-Head principle of motor design.

Each department is a separate factory in itself, occupying a single building or a group of buildings all centralized. For example, the motor department is in a specially designed

building covering seven and one-half acres of ground, and nothing but motors and motor parts are built there. The iron and semi-steel foundry—one of the most modern foundries in the country, by the way—occupies a specially constructed building. The brass and aluminum foundry has a separate building. The axle factory has several buildings. And so on.

The three assembly plants are in the center of the Buick factory, so that the finished units progress towards them, as completed. The progressive system of manufacture is also followed in each individual department, from the handling of the raw material as received until the unit is finished, each man or group of men having certain duties to perform. The re-handling of parts and materials is eliminated in practically all cases. Wherever possible, when one operation is completed the part is placed on a mechanical conveyer and carried to the next operation, and where this is not feasible the parts are piled on racks and carried away periodically by electric floor trucks. Motor cylinder blocks move on gravity conveyers from one operation to another. Motor assembly is accomplished on an endless chain. Other materials move from one floor to another on endless belt conveyers



The Buick Valve-in-Head Motor

FLINT, MICHIGAN, U. S. A.



or slide to the floor below in chutes. Heavy parts are handled by overhead monorail electric conveyers, or locally by hydraulic and pneumatic jacks.

An enormous tonnage of material is handled daily in this great factory, and in order to handle it economically and at the same time expeditiously, the various factories are connected by a network of railroad tracks and sidings. The Buick Motor Company owns a number of box cars which are operated exclusively on this private system by railroad crews and engines, the entire time of which is devoted to this work. Supplementing this heavier traffic system is a fleet of motor trucks, both heavy and light, to handle materials that cannot wait for the regular schedules. For the main traffic system moves on as regular a schedule as is followed on any railroad system.

The organization is not unlike that of a city. It has its own telephone and telegraph exchanges, as large as will be found in many of the smaller cities. Its power plant furnishes steam heat, electric light and compressed air. It has numerous retail stores and restaurants. It has a fully equipped hospital, with ambulance and attending physicians and nurses. Its personal service department looks after the

interests of employees, transferring them from one department to another where their ability will be more in evidence; sees that employees get proper legal advice when they need it, and renders much other personal service, even going to the extent of supplying the employees with coal during last winter.

Some of these departments may not appear to have a direct bearing on the manufacture of Buick cars, but they have a very practical effect in the long run in building up conditions and loyalty among the employees that make for the best possible kind of workmanship.

This is a sort of verbal birdseye view of the factory that was largely turned over to the Government for the manufacture of Liberty Motors and other war products. This war work is now being brought to a conclusion, and as rapidly as conditions permit, the same flexibility that enabled the Buick Motor Company to get into production so quickly on war work is being exercised to readjust the factory for the manufacture of Buick cars only.

In the years gone by, it has been impossible at any time to build enough Buick cars to supply the public demand. This condition has been increased during the war almost to the point of a Buick famine, because the pro-

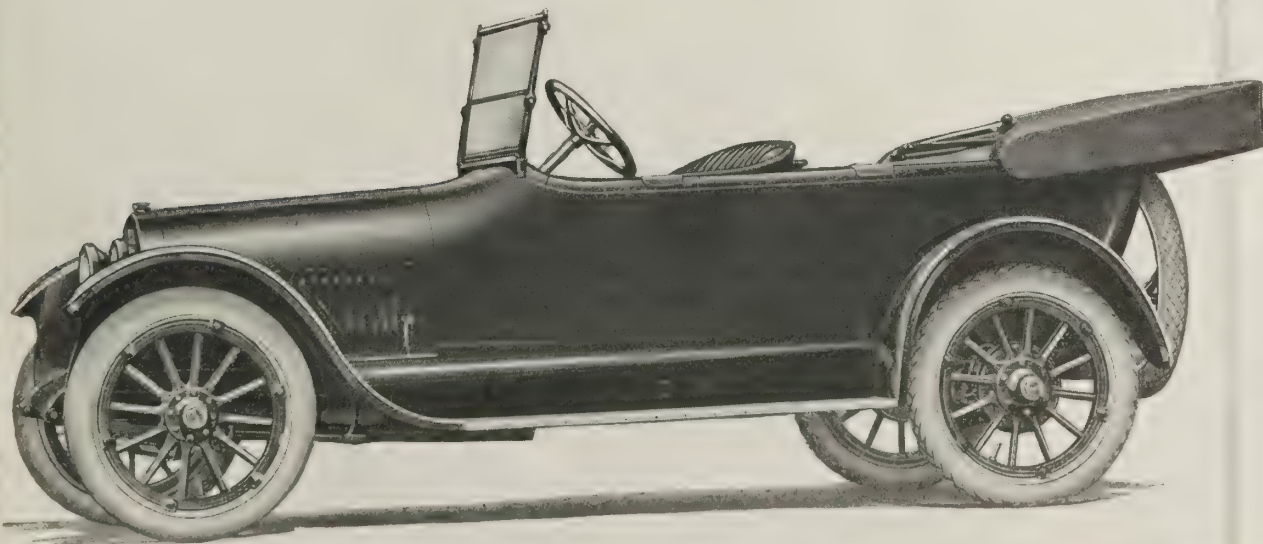
duction from a number of causes has been curtailed to an extremely low point. Many thousands of people who would have bought Buick cars during the past year or so if they could have secured them are still anxious to buy new Buicks. So no time will be lost in bringing the entire factory up to its full production capacity at the earliest possible moment.

The new Buick models for the nineteen-nineteen season have already been announced—three open and three closed types—and these are the cars that will be manufactured in constantly increasing quantities from now until the end of the season. There are many new features that recommend themselves very favorably to motor car buyers, and in comfort, convenience and performance these cars are equal to what the most ardent Buick enthusiast would have expected of the Buick Motor Company this season.

Increased production will not be achieved, however, at the expense of quality. The Buick business has been built up on quality that has been uniform always, and this quality is the guaranty of increased Buick business in the future.

The policy has been to build the best possible motor car for a reasonable price, and the entire organization has been developed on that basis. The large quantity of Government work done by the Company during the war has made it possible to hold the organization together to a great extent, and the high quality of the work involved has not permitted any retrogression in the workmanship. A limited number of Buick cars has also been built throughout the period of the war, to keep the production line-up as nearly intact as possible.

We therefore enter the after-the-war era practically where we left off. The war has been a diversion of activity—not a closing down with its attending evils. The Buick factory today is at its highest point of efficiency. Some new buildings are in the course of construction, as required by the plans for future expansion, and the Buick Motor Company will be one of the first motor car companies ready to take care of the demands of both owners and dealers for high-grade, dependable automobiles in quantities.



The Buick Valves-in-Head Model H Six-45

When Better Automobiles are



THE purchaser of a Buick closed model for nineteen-nineteen has the same latitude in selection as the purchaser of an open type, with the added advantages resulting from the closed design.

The corresponding car to the five passenger open model is the striking Model H-Six-47. This very complete closed car for five persons has four doors, permitting the same ease of entrance and exit as in the open car, while its weather-tight body and unusual ventilation facilities make it equally serviceable in hot or cold weather.

It would be difficult to design a car that would be capable of covering a wider range of motoring use, and for this reason it has proven to be extremely popular in cases where one car must serve a variety of purposes.

The interior is finished in an excellent grade of durable, gray automobile cloth, with carpet, shades and trimmings to match, and proper ventilation is secured by adjusting the three-piece windshield and turning the patented handles by which the door windows are raised and lowered.



Five-Passenger



Seven-Passenger

e Built, Buick will Build Them



Model, H-Six-47



Model, H-Six-50



THE Model H-Six-50 is a big, roomy closed car in which utility, comfort and convenience vie with each other for recognition. The good taste of the lines, finish and interior fittings are perfectly matched by the smooth and faithful performance of the powerful Buick Valve-in-Head motor.

Longer wheelbase—larger body—extra passenger capacity—constitute the principal difference between this car and the five passenger Model H-Six-47.

Following the latest practice in closed car design, the front seat extends clear across the body, and four large doors make entrance and exit easy from either side of the car to both front and rear compartments.

The rear compartment seats five—three on the wide rear seat and two on the comfortable folding chairs that telescope into the rear of the front seat.

The interior is lined and upholstered in fine gray automobile cloth, with silk shades, carpet and trimmings of the same shade, and two corner dome lights furnish illumination.



Lieutenant Colonel R. H. Abbott, president and general manager of the Abbott Light and Power Company, of Petersburg, Illinois, writes: "Our company serves a number of small towns that have grain elevators and small coal mines and I use my car to supervise the operation of these different motor installations. I consider that it would be impossible for me to properly look after my business without a car. Since the war has been declared I have been using it for the inspection and mustering of troops."



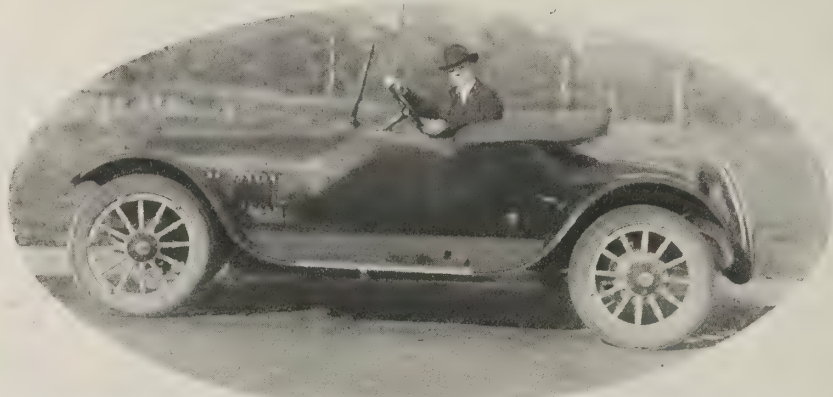
Mr. Chas. Seely, of Waupun, Wisconsin, writes: "As it stands in the picture, this car makes a trip four times daily. Each trip covers ten miles. The car has been in service a year with no expense except for tires."



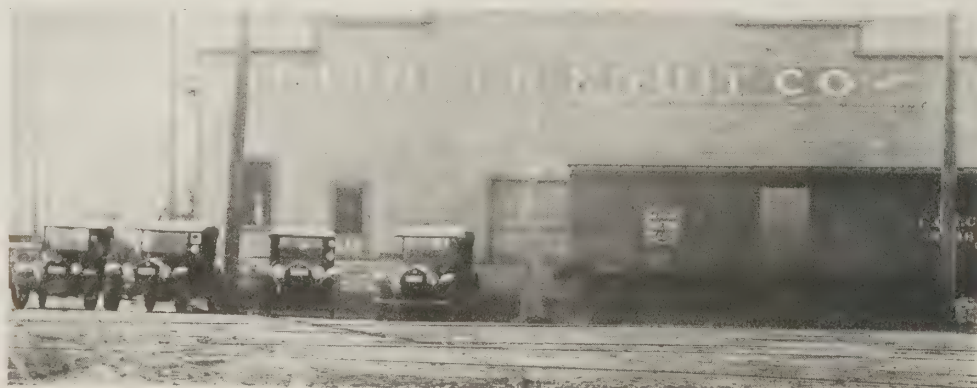
"I use a model E-Six-46 Buick car constantly, in buying grain. We also use two D-Six-45's and one E-Four-35 Buick at our seed corn plant. My son uses a D-Six-44 Buick at the elevator part of the business and my son-in-law uses an E-Four-35 Buick at the other elevator and coal station. We could not maintain the various plants without the use of our automobiles."—H. S. Houghton, President, H. S. Houghton and Son, Petersburg, Illinois.



C. C. Thompson is the Buick distributor in Suffolk, Virginia. He has constructed a very modern establishment to measure up to his conception of the Buick car, as explained in his slogan: "The Buick is not the best because I handle it—I handle it because it is the best."



"I find my Buick Model E-Six-44 a great advantage in covering my territory, for the reason that I can make five and six towns a day, while traveling by rail I make but two and three. I am well pleased with the Buick." W. H. Droege, Illinois Representative, Kokomo Steel and Wire Company.



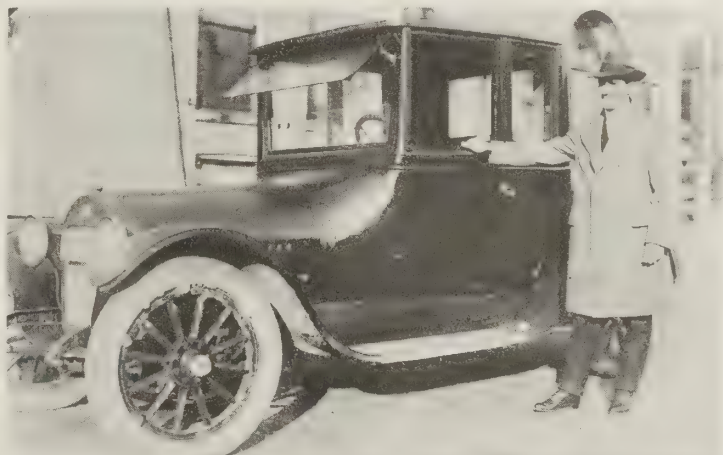
The Pioneer Fruit Company of California use a number of Buick cars at their various packing plants. This photograph shows four Buicks in use at the Lodi plant.



Hon. E. E. Jones, Mayor of Bloomington, Illinois, writes as follows: "I have run my Buick car 12,000 miles since July 1, 1916, and it has given splendid service—is economical on gasoline and a satisfactory car in all particulars. It has style, quality and durability. These combined in one car make it ideal. The Buick does its own talking."



"I am very much pleased with my Buick car," writes Mrs. E. M. Plackett, proprietor of the Plackett Coal Company, of Bloomington, Illinois. "Having driven other cars before owning a Buick, I find it an especially easy car to handle. The gasoline consumption is unusually low. The longer I run the car, the more of a Buick booster I feel myself to be."



Dr. A. D. Shaffer, of Bloomington, Illinois, relies wholly on his Buick car in taking care of his practice. He writes: "The Buick Coupe has proven to be a practical and serviceable car for me, and is in service every day of the year."



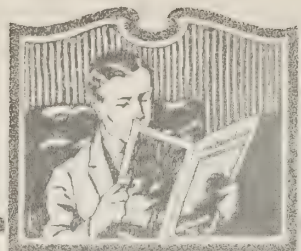
Mr. F. M. Barry, Assistant General Manager of the Pacific Steamship Company, of San Francisco, writes as follows: "Our Buick Car is in practically constant use in San Francisco and is a wonderful time saver in getting between our offices and piers and various shipping offices—in fact, wherever the business of the company takes the writer. We find the car more convenient than the railroad for visiting nearby agencies and wharves located on Monterey Bay, also in visiting and inspecting our offices and terminals in southern California. We find this saves us much time and expense over the method of using either steamer or rail."



The Sperry Flour Company, of San Francisco, operate ten flour mills in various Washington and California cities. Their salesmen use motor cars, sixteen of which are Buicks. During 1917 these sixteen Roadsters covered 149,385 miles. Mr. C. F. Ford, Traffic Mgr., says, "Our salesmen eliminate train service entirely and make far better time in traveling from place to place."

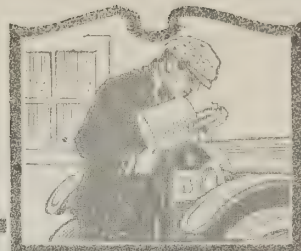
The Swinson-Buick Agency, of Pratt, Kansas, have been Buick dealers for many years, and have grown from a small establishment to the fine modern organization portrayed in this picture.





Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Preparing Car for Cold Weather Use

THERE are two important points to consider in driving an automobile during cold weather, in climates where the temperature drops to the freezing point or below. The first is the use of an anti-freeze solution in the cooling system, and the second is the lubrication.

The simplest form of anti-freeze solution and the one in most general use is a mixture of alcohol and water in the proper proportions. These proportions must be varied according to the temperature, as follows: For temperatures ranging from the freezing point to zero, mix 1 gallon of alcohol with three gallons of water. This makes sufficient solution to fill the entire cooling system. When the temperature falls below zero, 1½ gallons of alcohol and 2½ gallons of water should be used.

At the time the anti-freeze solution is placed in the water system, the drain cock at the bottom of the radiator should be opened, all water drained out and the system thoroughly flushed with clean water until it runs out clear.

As alcohol boils at a considerably lower temperature than water, the evaporation of the

alcohol will be much greater than that of the water. This makes it necessary to add alcohol to the mixture from time to time, the safe practice being to add enough alcohol to fill the radiator to the proper level, instead of adding water.

Regarding cold weather lubrication: There are three points that require different attention than in warm weather—the crankcase reservoir, the transmission and the rear axle.

At the beginning of the cold season, it is advisable to drain the oil from the crankcase, flush out and refill with fresh oil of good quality. Every 500 miles during the severely cold weather this operation should be repeated. The reason for this is that the grade of gasoline now being furnished is much lower test than was marketed several years ago, and as a result the less volatile elements condense much quicker and run down the cylinder walls into the crankcase, eventually destroying the lubricating qualities of the motor oil. Naturally this condensation takes place more freely while the motor is cold and during the warming up of the motor. The same thing occurs

during the warm weather, but not to such a great extent as when it is cold.

The thick lubricants in the transmission and rear axle should be thinned out with motor oil at the beginning of cold weather, in order to give the best results. There is a tendency on the part of these thick lubricants to adhere to the transmission and rear axle housings when they become congealed by the cold, and this tendency is overcome by adding some fluid motor oil to these lubricants. The correct proportions are, one-half heavy lubricant and one-half motor oil. It is quite necessary that both the transmission and rear axle should have this attention at the beginning of cold weather, because if it gets cold enough it may happen that all of the lubricant in both of these units will stick to the walls of the housings in a compact mass, leaving the gears to revolve in the center practically without lubrication. Even if this extreme case should not occur, thinning out the lubricant will greatly facilitate the easy shifting of gears in cold weather and will insure the smooth operation of both units by supplying the proper lubrication to them.

THE EMPTY HOUSE

Continued from page four

The children! It was they who furnished the house when the furniture was shabby and spare. It was they who gave relish to the food when the larder was scanty. It was they who filled the mind, and left no room for the lumber and cobwebs; they who filled the heart and left no room for the empty ache; they who made the labor easy and the reward worth having; they who heartened the sacrifices that were nearest to a prayer!

The children! It was they who had brightened his goings and his comings. They clustered around him and clambered upon him as he went down the stairs. They smiled at him and rushed after him from the doorways. They waved at him from the windows as he passed through the gate. They followed him into the road for another kiss as he left the empty house. He was not a man who prayed often; but his lips moved silently in a prayer—

"You find the house much as you left it, Sir Albert?" said the agent deferentially, when he handed back the key.

"Times have changed for the better with you since then!"

He smiled his pleasant smile. He had a good manner, everyone said. It was kindly, like the man.

"Yes, times have changed," he agreed.

He glanced over his shoulder as he spoke and smiled again. Time changes; but memory knows no changing. There were memories still at the gloomy windows, and it seemed to him that he was smiling at his babies. He looked back to them once more before he turned the corner, and found that he was smiling still.

God, to whom all things are possible, would know the reward, he thought, for his years of strenuous life—the life that had been his prayer. When time had done with its foolish fleeting and houses were leveled with the dust, the memories unchanged and unchanging would still be with him—the memories of his children when they were children!

Helps Owner Manage Three Farms

ITAKE a great deal of pleasure," writes Mr. J. P. Van Duzee, of the Judson Orchard Farm, Cairo, Georgia, "in giving you a brief history of our Buick Model D-Six-45.

"I live on a farm two miles from Cairo and, besides running the home farm of 400 acres, I have two other farms, or pecan orchards, to manage, one three miles the other side of Cairo, and one a mile north of town. I go from one to the other nearly every day and the round trip is something like twelve miles. You see, without a reliable car this would be rather a hard trip to make, in view of the fact that my trips must be made in a hurry and a delay would cost money.

"I have driven our present car twenty-two months and she has never failed to go when we

winter (due to extreme heat in this section) and we are going to have it done rather than buy a new car, as I am sure that a new car would have nothing on ours.

"My business is such that it would be impossible to get over the ground without a car and the car that I drive must be one that will go whenever it is necessary.

"Words fail to express my appreciation of the Buick, but you may rest assured that I will be a strong booster for your car."

Secures Business Efficiency

MR. D. P. SCUDDER, Secretary and Treasurer of the Consolidated Sales Company, of San Francisco, wrote under date of August 21st:

"At the present time we have four cars in use. Three of these are Buicks and we shortly expect delivery of a fifth car, which will be a Buick. We have chosen Buick automobiles because we find they are always on the job, have an abundance of reserve power and because tire and fuel expense are reduced to a minimum.

"The automobile permits our representatives to close business with from six to fifteen different organizations in a day, where it would be impossible to call on more than three or four at the most without its use. Our machines are distributed from the State of Washington to the California-Mexico border and we are frank to state that without them it would be practically impossible for us to operate.

"Our Buicks are daily and consistently covering the highways of the Pacific coast, performing a service that might be measured in dollars and cents but is better measured in the term 'efficiency,' that new-found virtue we are all endeavoring to cultivate."

No Chance for Improvement

MR. S. P. CARPENDER, of Steamboat Springs, Colorado, wrote the following letter from Kirtland, Ohio, on August 20th:

"I have traveled 7,180 miles and have never laid up for one hour during the ten months I have had my Buick Model E-Six-45. I have not spent one dollar on it for repairs. It has always been ready to go when I was and I have found it satisfactory in every respect. I am wondering how the Buick people are going to find any chance to improve on this model.

"I am well pleased with the car and have never seen a Buick owner who took care of his car that was not perfectly satisfied."

The Buick Line for 1919



Three Passenger Open Model, H-Six-44	\$1595
Five Passenger Open Model, H-Six-45	1595
Four Passenger Closed Model, H-Six-46	2085
Five Passenger Closed Model, H-Six-47	2195
Seven Passenger Open Model, H-Six-49	1885
Seven Passenger Closed Model, H-Six-50	2585

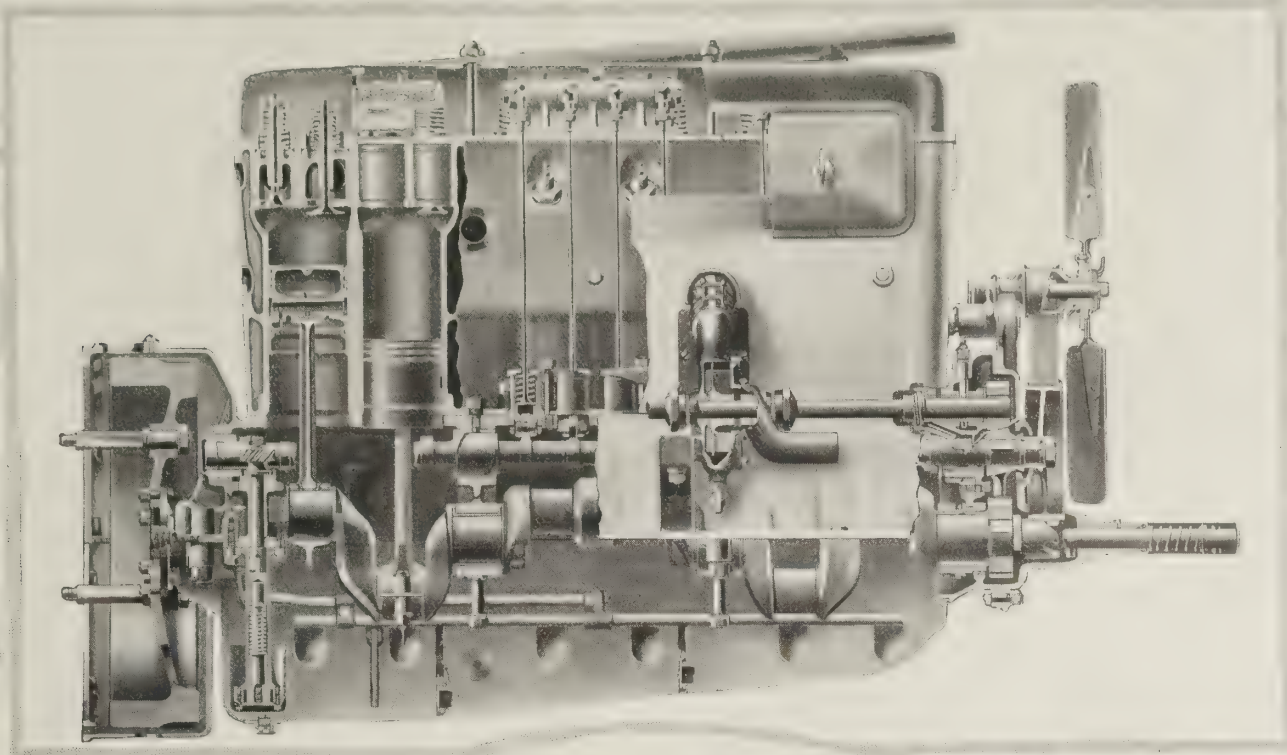
Buick Motor Company
Flint, Michigan

are ready. Before getting the Buick I drove several other makes and found that a great part of my time was spent in getting the car ready to go and then more or less trouble on the road keeping her going. Whenever we get ready to go to Atlanta, 300 miles north, or Jacksonville, 200 miles east, or any other place, we feel that all we have to do is get in and the car will take us there.

"This car has been driven about 12,000 miles and has never been in the shop for repairs. One of the original tires is still in use and we just discarded another a few days ago. Our car needs painting and will need a new top this

EVERYBODY KNOWS VALVE-IN-HEAD MEANS BUICK

The Buick Valve-in-Head Motor



EVERY product that receives the endorsement of hundreds of thousands of people and builds up a widespread reputation for its manufacturer, has certain distinguishing characteristics that set it apart and make it of particular value to its users.

The predominating characteristic of Buick cars, and the one that more than all others has given the name Buick its prestige in motoring circles is the Valve-in-Head motor.

The interest of the motorist logically centers about the motor in his car, because the motor is the source of power and locomotion, and its gasoline consumption is a fixed item of expense.

Therefore, the principle of motor design that combines the greatest power with the lowest consumption of gasoline is the most satisfactory from the standpoint of the owner. It means motoring efficiency in its truest sense. And the type of motor which gives this efficiency is the Valve-in-Head type.

For nearly twenty years the Buick Motor Company has concentrated on the development of the Valve-in-Head motor, and as a result the Buick motor combines all the possibilities of this type in a remarkable manner.

There are definite scientific reasons why the Valve-in-Head motor possesses marked advantages over other types of design.

In discussing internal combustion motors, it is first necessary to get one fact firmly fixed in mind, namely—that they are all heat engines. In other words, they derive their power by converting the fuel used in operating them into heat, and it is the expansion of the heated gases resulting from each explosion in the cylinders that supplies the impulses necessary to run the motors.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be.

In engineering terms, this principle is known as thermal efficiency.



Sectional views of Buick Valve-in-Head motor and automatically lubricated rocker arm

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water jacketed space there is in a motor, the greater the thermal (heat) efficiency will be, because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases, both inlet and exhaust valves form a part of the combustion

chamber, where the heat is greatest, and in consequence it is necessary to water jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. And this pocket is of necessity water jacketed.

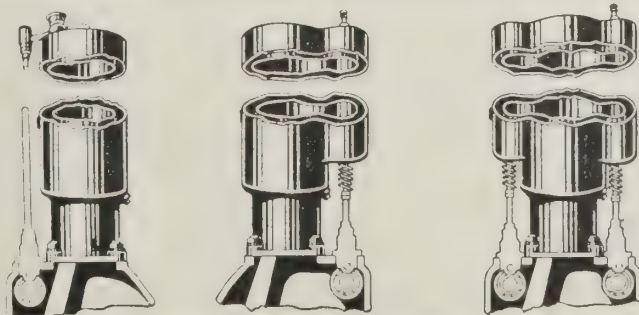
In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water jacketed, it follows that the Valve-in-Head type affords the absolute minimum of water jacketed space that is possible to be secured for any given size of cylinder.

Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water jacketed surfaces, the more of them will be left in the form of actual, useable power directed against the pistons.

Then, because the large valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is much more perfect in the Buick motor because the incoming charges are purer and the electric spark has a shorter distance to travel in the brief instant of time that it must do its work in igniting the mixture.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other types of motors, a quicker ignition of the charge and a smaller loss of heat through the water jackets. The sum of these advantages is more power with less gasoline consumption.



Valve-in-Head

L-Head

T-Head

Because of its design, the Valve-in-Head motor has less water jacketed space than any other type of motor, which means that less heat is wasted through radiation and greater fuel economy results

Buicks Help Illinois Farmers



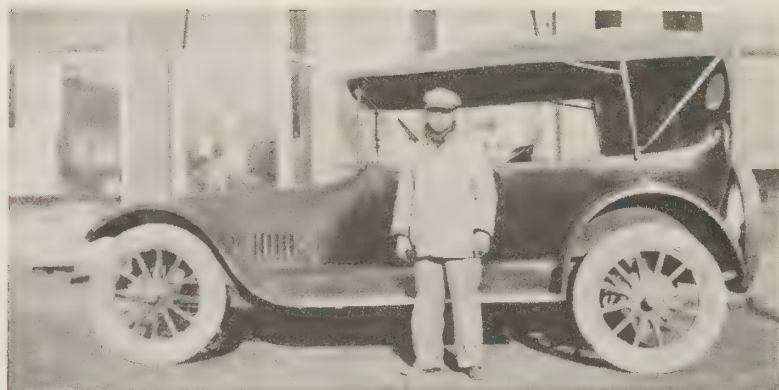
"I live in town so my children can go to school, and because of the scarcity of labor, farm my own place 20 miles away. I can get up early and get there in time for a good day's work and get home in time for supper. I consider my Buick Model E-Six-45 essential. It is my second Buick."—Frank Stivers, Blue Mound, Ill.



Mr. H. Schaumburg, Sr., of Milford, Ill., is the owner of this Model E-Six-46 Buick—his third Buick car. He says he would be lost without his car and says it is the most essential piece of machinery on his farm



Dr. J. F. Stanford, of Fayetteville, Arkansas, owns and drives this 1912 Buick Model M-35, which has been driven over 50,000 miles over rough and hilly roads and still giving good service. Dr. Stanford says his repair bill has been only seven dollars



"I consider my Buick Model D-Six-45 a very valuable asset in my business as a farmer. It is useful to make quick trips to town for repairs when I break machinery, and that is a common thing."—Chas. Crawford, Macon, Illinois



"I haul cream, potatoes, crated hogs and other produce to town, and haul back anything from bran and shorts to lumber. My first car was a Buick Model 17, my present one a Model D-Six-45."—Lou Briggs, Stonington, Ill.



"My Buick Model E-Six-45 is always considered first in delivering produce. I hauled strawberries 18 miles to market on a light wagon behind the car. I also have a big orchard 45 miles from here and could not do without the car in the many trips it is necessary for me to make there."—Martin Miller, Blue Mound, Illinois



"My business is farming and stock buying. The latter calls for a great deal of driving and I consider my Buick Model D-Six-45 a valuable asset for this reason, as well as for the many uses I put it to for the benefit of my farming."—Elbie Baughman, Blue Mound, Illinois



EVERY day — everywhere — busy men plan to achieve the greatest results possible in the all-too-brief time at their disposal. And so the motor car has grown to be an indispensable factor in making outside calls and keeping outside appointments.

The make of car used in this service is vital, insofar as it guarantees dependable transportation under all conditions of road, weather and service.

Buick Valve-in-Head cars have long been firmly established in business circles, where businesslike performance is necessarily combined with clean-cut appearance.

Buick Motor Company, Flint, Michigan

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities — Dealers Everywhere



THE farmer's motor car knows no holiday—no Saturday evenings off. No matter what the season of the year may be, nor what the hour of the day or night, it must always be ready for service.

That is another way of saying that it must be absolutely reliable, because it is the connecting link between the farm and the outside world.

Power, speed, convenience, appearance—are all features that the farmer can see and



prove for himself in a very short time. But reliability is something that must be guaranteed by long use.

That is why so many farmers own Buick cars. They are guided entirely by their own experience and that of their neighbors.

Buick Motor Company, Flint, Michigan
Pioneer Builders of Valve-in-Head Motor Cars

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THE
BUICK MOTOR COMPANY

THE *Buick* BULLETIN

Published by the Sales Department
of the Buick Motor Company

DECEMBER 1911

FIVE CENTS A COPY



In this issue—"OLD ROSES"—By Gilbert Parker



While Soldiers Fight

She knits—this Mother—for her soldier son,
 And while her nimble fingers swiftly run
 Her thoughts keep pace:
 She prays the garment, knit with fondest care,
 Will make his cold night vigils "Over There"
 Less hard to face.

She sleeps, by loving labor lulled to rest,
 Her tired head drooped forward on her breast,
 And dreams of when
 Her son, with steady eye and bronzed cheek,
 His duty being done, returns to seek
 Her arms again.

She waits, and waiting plays the woman's part—
 With deed and word to cheer her hero's heart.
 While soldiers fight,
 Ten million noble women such as she
 Back every blow they strike for Liberty
 With woman's might.

—Wallace George.

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E.T. Strong Managing Editor

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Volume Seven

Flint, Michigan, U. S. A.

Number Twelve

OLD ROSES

By GILBERT PARKER

Illustrations by A. W. GRANN

It was a barren country, and Wadgery was generally shrivelled with heat, but he always had roses in his garden, on his window-sill, or in his button-hole. Growing flowers under difficulties was his recreation. That was why he was called Old Roses. It was not otherwise inapt, for there was something antique about him, though he wasn't old; a flavor, an old-fashioned repose and self-possession. He held a position with the Government and kept mostly to himself, though when not travelling he always went down to O'Fallen's Hotel once a day and talked to Vic, the barmaid, or to chance visitors. He never drank with anyone, nor asked anyone to drink; and, strange to say, no one resented this. As Vic said, "He was different." Dicky Merritt, the solicitor, who was hail-fellow with squatter, homestead lessee, cockatoo-farmer and shearer, called him "a

lively old buffer." It was he, indeed, who gave him the name of Old Roses. Dicky sometimes went over to Long Neck Billabong, where Old Roses lived, for a reel, as he put it, and he always carried away a deep impression of the Inspector's qualities. "Had his day," said Dicky in O'Fallen's sitting-room one night, "in marble halls, or I'm a Jack. Run neck and neck with almighty swells once. Might live here for a thousand years and he'd still be the nonsuch of the back-blocks."

Victoria Dowling, the barmaid, lifted her chin slightly from her hands, as she leaned through the opening between the bar and the sitting-room, and said: "Mr. Merritt, Old Roses is a gentleman; and a gentleman is a gentleman till he—"

"Till he humps his bluey into the Never, Never Land, Vic? But what do you know about gentlemen, anyway? You were born five miles from the Jumping Sandhills, my dear!"

"Oh," was the quiet reply, "a woman—the commonest woman—knows a gentleman by instinct. It isn't what they do, it's what they don't do; and Old Roses doesn't do lots of things."

"Right you are, Victoria, right you are again! You do the Jumping Sandhills credit. Old Roses has the root of the matter in him—and there you have it!"



"When I got free, I knew; I waited."

Dicky had a profound admiration for Vic. She had brains, was perfectly fearless, no man had ever taken a liberty with her, and everyone in the Wadgery country who visited O'Fallen's had a wholesome respect for her opinion.

About this time news came that the Governor, Lord Malice, would pass through Wadgery on his tour up the back-blocks. A great function was necessary. It was arranged. Then came the question of the address of welcome to be delivered at the banquet. Dicky Merritt and the local doctor were proposed as composers, but they both declared they'd only "make rot of it," and suggested Old Roses.

They went to lay the thing before him. They found him in his garden. He greeted them, smiling in his quiet, enigmatical way, and listened. While Dicky spoke, a flush slowly passed over him, and then immediately left him pale; but he stood perfectly still, his hand leaning against a sandal tree, and the coldness of his face warmed up again slowly. His head having been bent attentively as he listened, they did not see anything unusual.

After a moment of silence and inscrutable

deliberation, he answered that he would do as they wished. Dicky hinted that he would require some information about Lord Malice's past career and his family's history, but he assured them that he did not need it; and his eyes idled somewhat ironically with Dicky's face.

When the two had gone, Old Roses sat in his room, a handful of letters, a photograph, and a couple of decorations spread out before him; his fingers resting on them, and his look engaged with a very far horizon.

The Governor came. He was met outside the township by the citizens and escorted in—a dusty and numerous cavalcade. They passed the Inspector's house. The garden was blooming, and on the roof a flag was flying. Struck by the singular character of the place, Lord Malice asked who lived there, and proposed stopping for a moment to make the acquaintance of its owner, adding, with some slight sarcasm, that if the officers of the Government were too busy

to pay their respects to their Governor, their Governor must pay his respects to them. But Old Roses was not in the garden nor the house, and they left without seeing him.

The night came. Old Roses entered the dining-room quietly with the crowd, far in the Governor's wake. According to his request, he was given a seat in a distant corner, where he was quite inconspicuous. Most of the men present were in evening dress. He wore a plain tweed suit, but carried a handsome rose in his button-hole, and appeared to be much interested in Lord Malice. The early proceedings were cordial, for the Governor and his suite made themselves most agreeable, and talk flowed amiably. After a time there was a rattle of knives and forks, and the Chairman rose. The doorways of the room were filled by the women-servants of the hotel. Chief among them was Vic, who kept her eyes mostly on Old Roses. She knew that he was to read the address and speak, and she was more interested in him than in Lord Malice and suite. Her admiration of him was great. He had always treated her as a lady, and it had done her good. He looked earnestly into her brown eyes, and—

"And I call upon Mr. Adam Sherwood to speak to the health of His Excellency, Lord Malice."

In his modest corner Old Roses stretched to his feet. The Governor glanced over carelessly. He only saw a figure in gray, with a rose at button-hole. The Chairman whispered that it was the owner of the house and garden which had interested His Excellency that afternoon. His Excellency looked a little closer, but saw only a rim of iron-gray hair above the paper held before Old Roses' face.

Then a voice came from behind the paper: "Your Excellency, Mr. Chairman, and gentlemen—"

At the first word the Governor started, and his eyes flashed searchingly, curiously, at the paper that walled the face and at the iron-gray hair. It had a peculiarly penetrating quality. A few in the room—and particularly Vic—were struck by something in the voice—that it resembled another. She soon found the trail. Her eyes also fastened on the paper. Then she moved and went to another door. Here she could see behind the paper, at an angle. Her eyes ran from the screened face to that of the Governor. His Excellency had dropped the lower part of his face in his hand, and he was listening intently. Vic noticed that his eyes were painfully grave and concerned. She also noticed other things.

The speaker referred intimately, and with peculiar knowledge of the family history of Lord Malice, to certain more or less private matters which did not concern the public, to the antiquity of the name, and the high duty devolving upon one who bore the Earldom of Malice. He dwelt upon the personal character of His Excellency's antecedents, and praised their honorable services to the country. He referred to the death of Lord Malice's eldest brother in Burmah. Then, with acute incisiveness, he drew a picture of what a person in so exalted a position as a Governor should be and should not be. His voice assuredly had at this point a fine edge of scorn. The aides-de-camp were nervous, the Chairman apprehensive, the Committee ill at ease. But the Governor now was perfectly still, though, as Vic Dowling thought, rather pinched and old looking. His fingers toyed with a wine glass, but his eyes never wavered from that paper nor the gray hair.

Presently the voice of the speaker changed.

"But," said he, "in Lord Malice we have—the perfect Governor; a man of blameless and enviable life, and possessed abundantly of discretion, judgment, administrative ability and power; the absolute type of English nobility and British character."

Then he dropped the paper from before his face, and his eyes met those of the Governor, and stayed. During the rest of the speech—delivered in a fine-tempered voice—he sat as in a dream, yet his eyes intently upon the other, who now seemed to recite rather than read.

He thrilled all by the pleasant resonance of his tones, and sent the blood aching delightfully through Vic Dowling's veins.

When he sat down there was immense applause. The Governor rose in reply. He spoke in a low voice, but anyone listening outside would have said that Old Roses was still speaking. By this resemblance the girl, Vic, had trailed to others. It was now apparent to many.

The last words of the Governor's reply were delivered in a very convincing tone, as his eyes hung on Old Roses' face. "And, as I am indebted to you, gentlemen, for the feelings of loyalty to the Throne which prompted this reception and the address just delivered, so

for two things: to take the title, just vacant by our father's death, and to marry my intended wife, who appeared to have little care which brother it was. You got both. I was long a prisoner. When I got free, I knew; I waited. I was waiting till you had a child. Twelve years have gone; you have no child. But I shall spare you yet awhile. If your wife should die, or you should yet have a child, I shall return."

The Governor lifted his head wearily from the table where he now sat. "Tom," he said in a low, heavy voice, "I was always something of a scoundrel, but I've repented of that thing every day of my life since. It has been knives—knives all the way—I am glad—I can't tell you how glad—that you are alive."

He stretched out his hand with a motion of great relief. "I was afraid you were going to speak tonight—to tell all, even though I was your brother. You spared me for the sake—" "For the sake of our name," the other interjected stonily.

"You will not wipe the thing out, Tom?" asked the other anxiously.

Tom Hallwood dried the perspiration from his forehead.

"It can never be wiped out. For you shook all my faith in my old world. That's the worst thing that can happen a man. I only believe in the very common people now—those who are not put upon their honor. One doesn't expect it of them, and, unlikely as it is, one isn't often deceived in them. . . . I think we'd better talk no more about it."

"You mean I had better go, Tom."

"I think so. I am going to marry soon." The other started nervously. "You needn't be so shocked. I'll come back one day, but not till your wife dies, or you have a child, as I said."

The Governor rose to his feet and went to the door. "Whom do you intend marrying?" he asked in a voice far

from regal or vice-regal; only humbled and disturbed. The reply was instant and keen, "A barmaid."

The other's hand dropped from the door. But Old Roses, passing over, opened it, and, mutely waiting for the other to pass through, said:

"I do not doubt but that there will be issue. Good-day, my Lord!"

The Governor passed out from the pale light of the lamp into the gray and morning. He turned at a point where the house would be lost to view, and saw the other still standing there. The voice of Old Roses kept ringing in his ears sardonically. He knew that his punishment must go on and on.

And it did. Old Roses married Victoria Dowling from the Jumping Sandhills, and there was comely issue, and that issue is now at Eton; for Esau came into his birthright, as he hinted he would, at his own time. But he and his wife have a way of being indifferent to the gay, astonished world. And, uncommon as it may seem, he has not tired of her.



The Governor passed out from the pale light of the camp into the gray morning.

am I indebted to Mr.—Adam Sherwood for his admirable language and the unusual sincerity of his speaking; and to both you and him for most notable kindness." Immediately after the Governor's speech Old Roses stole out; but as he passed through the door where Vic stood, his hand brushed against hers. Feeling its touch, he grasped it eagerly for an instant, as though he was glad of the friendliness in her eyes.

It was just before dawn of the morning that the Governor knocked at the door of the house by Long Neck Billabong. The door opened almost at once, and he entered without a word.

He and Old Roses stood face to face. His face was drawn and worn, the other's cold and calm.

"Tom, Tom," Lord Malice said, "we thought you were dead—"

"That is, Edward, having left me to my fate in Burmah—you were only a half mile away with a column of stout soldiers and hillmen—you waited till my death was reported, and seemed assured, and then came on to England

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

THE present situation with reference to motor cars is in some respects quite similar to the general conditions affecting other articles of everyday life—and practically all of them have been affected.

Without doubt, America is the greatest sugar consuming nation in the world. Yet Americans for many months have been compelled to get along on reduced sugar rations and no doubt will have to continue to do so for some time to come. There simply has not been enough to go around, and temporary conservation was the only answer to the problem.

Wool has been scarce, or rather the overwhelming demand for wool made it so. The result was that wool sold at a premium and all-wool material was hard to get.

Numerous other examples might be cited, but in all of them the same basic conditions exist—restricted production or overwhelming demand. Four years of war had upset the manufacturing facilities of our Allies to such an extent that America had to help them out as well as to take care of her own greatly increased needs.

There is not enough steel being produced at present to take care of the world's needs in full. And inasmuch as there is no substitute for steel in the manufacture of good motor cars, it follows that only a limited number of motor cars can be built for the time being.

UNDER the conditions that have steadily developed during the past several months, the shortage of Buick cars has become greater and greater. At the same time, the need for dependable automobiles in business has become more pressing than ever because a greatly increased volume of business is being done by a lessened number of men.

Therefore, the plain duty of the motor car manufacturers—and their dealers—is to see that such motor cars as it is possible to build under existing conditions are distributed where they are most needed, and for the present owners of motor cars to make the best use of the cars they now have.

Many Buick owners are in the habit of purchasing new Buick cars each season, in order that they may have the benefit of any improvements that have been made. But at present it is impossible to supply them with new cars, and dealers all over the country have been forced to ask thousands of people to wait an indefinite length of time for their new Buick cars.

To the man who already owns a Buick, this necessity should not work any hardship. As far as actual service

is concerned, an extra season or two need not make any great difference, and he is really fortunate to own a good, serviceable automobile at such a time.

THERE has never been any change in Buick standards. It is true that constant improvements in design, both of body and mechanism, are being made, so that each succeeding Buick model surpasses its predecessor in many important respects. But there is no difference in the quality of material and workmanship in the old and the new Buick Valve-in-Head cars and with proper care they will give good service over a period of years.

Serviceability has always been the outstanding feature of Buick cars, as is well known to vast numbers of motorists who have long been members of the Buick family. It is this serviceability, principally, that has caused them to buy Buick cars year after year to serve them in an infinite variety of business pursuits and under every variety of motoring conditions.

For nine years, it has been impossible for the Buick Motor Company to build enough cars to supply the demand that has resulted from the satisfaction of Buick owners as a class, in spite of the fact that during that period many acres of floor space and great quantities of modern machinery have been added to the factory.

WHEN the conditions brought about by the great war developed, the shortage became acute and was made still more so by the fact that a considerable portion of the Buick factory was turned over to the Government for the manufacture of Liberty motors, shells, stampings and various other war materials. Engineers, machinery and mechanics were immediately enlisted in the new work, and the story of their achievements in the manufacture of some truly wondrous mechanisms for war purposes—when at last that story shall be made public—will always be a glorious chapter in Buick history.

As far as the Liberty motor is concerned, the factory was already well organized for its manufacture. One of the greatest difficulties encountered in preparing for the manufacture of this motor among motors was to find mechanics of sufficiently high calibre to perform the thousands of extremely accurate operations necessary to make it all that it should be.

At the Buick factory were thousands of such workmen, thoroughly trained by years of experience in building Buick Valve-in-Head motors and working under the supervision of executives and engineers who were highly specialized in internal combustion engine produc-

tion. Whole departments of the factory were turned over bodily to this work—personnel, equipment, everything. They worked in their own way, subject only to results as determined by the Government experts who checked the finished product. In this manner it was possible to apply Buick methods of building to the Liberty motor—methods that had been developed by long study and painstaking research. Many of these methods were absolutely unique.

As an illustration, the Buick drop forge experts, by following the same general method as that employed in forging Buick crankshafts, were able to forge the Liberty motor crankshaft, with its twelve "throws," in one trip through the hammers and without the necessity for subsequent bending. As far as we know, no other forge plant in the country has been able to duplicate this feat.

The enormous size of the Buick factory, coupled with such manufacturing methods as this, made it possible to insure quantity production in a surprisingly short time, and to keep that production constantly on the increase.

BUT from this time forth there will no doubt be a tapering off of war work, and as conditions become more nearly normal it will be possible to resume the plans for still greater production of Buick cars that were interrupted by the great struggle.

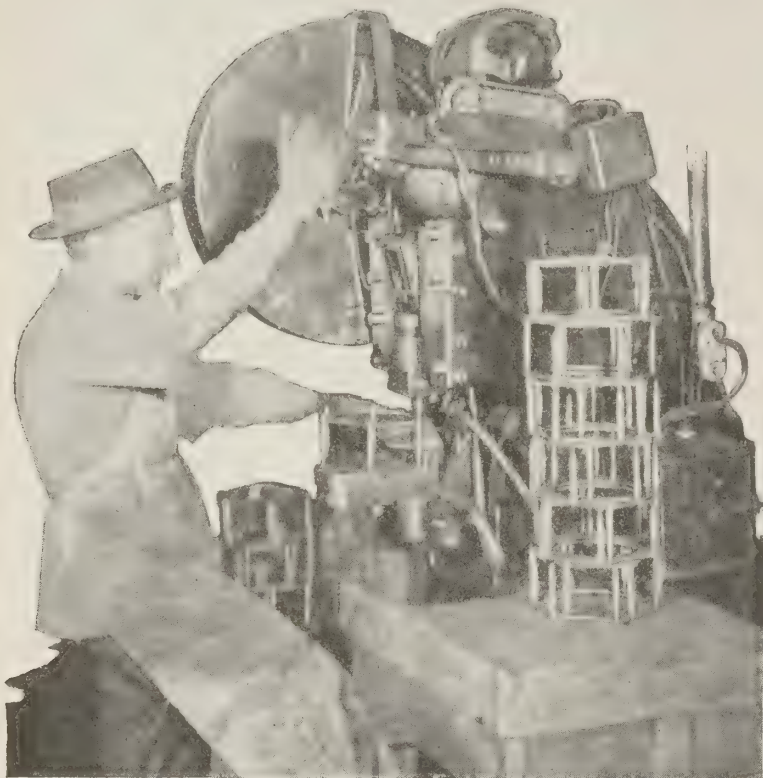
It should be borne in mind, however, that all this will take time—considerable time. The materials that have been so largely drawn upon by the war are, in the main, the very materials that are most needed in time of peace, and until things have had an opportunity to readjust themselves it will be impossible for the Buick Motor Company to get its output up to the peak of production.

The future in all lines seems very bright, and in the busy period that is just commencing the motor car will surely play an even more important and useful part than it has in the past.

The Buick Motor Company assures its owners and dealers that the resumption of quantity production of Buick cars will be accomplished as soon as is practicable without impairing the quality of the cars. The situation will improve constantly. In the meantime it will be necessary to ask many who wish to purchase new Buicks to be as patient as the occasion requires and the dealers to see that such new cars as it is possible to give them are placed in the hands of owners who are in the greatest need of them from a business standpoint.

The Buick Disc Clutch

and How it is Built



Six studs are tightly pressed into the holes in the front release plate, after which they are taken to this electric welding machine and the outer ends welded in place. The other ends of the studs are threaded for the nuts that hold the whole assembly together

THERE are four main points of superiority in the Buick clutch that recommend it particularly to the motor car owner:

1. Extreme smoothness of operation.
2. Instant response to a light pressure on the foot pedal.
3. Easy gear shifting, due to the heavy rotating parts being carried by the flywheel.
4. Positive action over long periods of time, due to the quality and size of the friction surfaces.

These points are partly accounted for by patented features of design, and partly by the unusual care and accuracy exercised in manufacture. The entire clutch is built in the Buick factory, where all operations are under the control of Buick engineers and manufacturing experts.

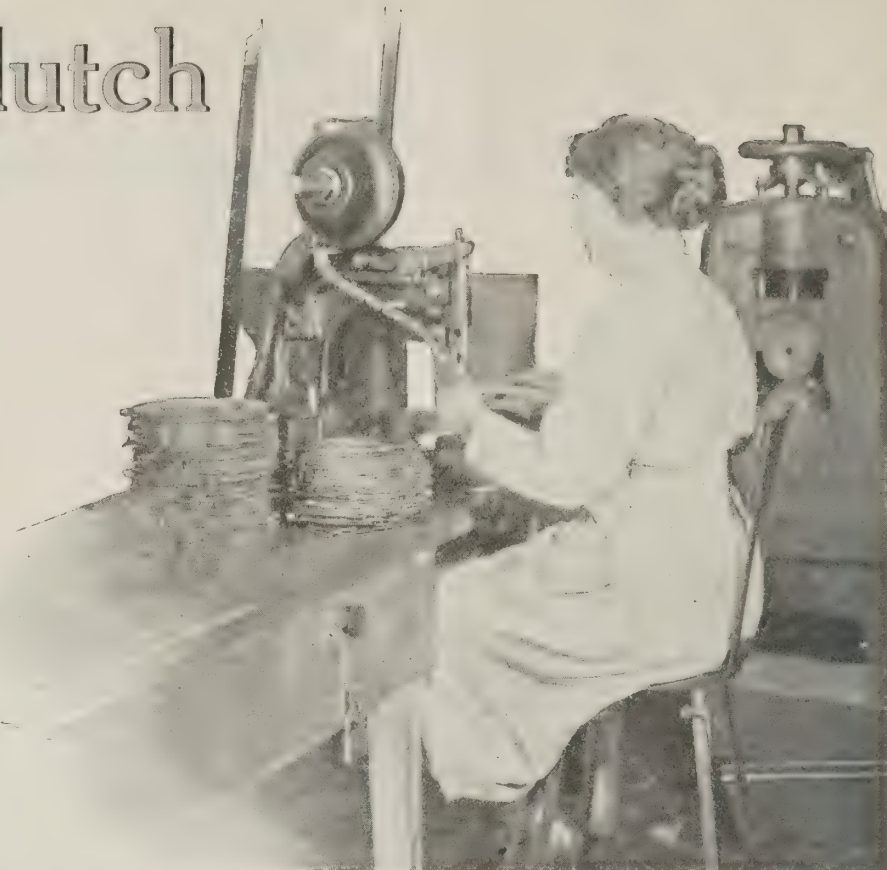
THE basis for the clutch is the hub, or spider, around which the clutch is built. This hub consists of a steel casting, made in the Buick foundry, which is first pickled in acid to remove the scale and then shot blasted to smooth it up for the machining operations. From the hub radiate six extensions, equally spaced, upon which are carried the driven discs of the clutch, five in number. Studs fastened to the rear of the flywheel carry the five driving discs, the whole being held together by a heavy spring tension. Upon relieving the spring tension by pressing down on the clutch pedal, the discs are no longer in contact with each other, so that the driving discs are free to revolve with the flywheel while the driven discs attached to the clutch hub remain stationary. The hub, in turn, connects with the clutch gear that operates the transmission gears, so that when the clutch is thrown out the power ceases to flow to the entire transmission system of the car.

At either end of the clutch are the release plates, while at the rear is the clutch spring cup plate which maintains the pressure of the spring, holding the discs together.

The first operations on the plates and discs are done in the sheet metal department. Large drawing presses are fitted with "blanking" dies upon which the special sheet metal material for the plates is laid. The upper halves of the dies descend upon the sheet metal, form it to shape and trim off the outer edges.

The plates are then placed in gravity conveyers that carry them along to the next machine, where the various holes in the plates are cut in a single operation. For example, there are 26 holes in the spring cup plate, 18 holes in the front release plate and 18 holes in the rear release plate.

The discs go through a somewhat similar operation, except that they are flat and it is not necessary to do any drawing work on them. The clutch driving discs are fitted with holes that match the outside diameter of the studs on the flywheel accurately, and the inside diameters of the clutch driven discs have flanged slots that must match the machined extensions on the clutch hub. This work is all done by the use of dies and broaches, without machining.



This patented riveting machine rivets the heat-proof asbestos facing to Buick clutch plates very much after the manner of the eyeletting machines used in putting eyelets in shoes. The rivets are of copper and sink deep into the material, giving ample room for possible wear



This is the Buick method of hardening the tips of the wings on the clutch hub without altering the steel structure of the hub itself. The hubs revolve on the horizontal rod, the ends of the wings just dipping into the bath of heated cyanide

The clutch spring cup is a splendid example of the possibilities of sheet metal drawing and is made complete from a flat sheet in five operations.

ALL this material is then sent to the clutch department proper, as required for production. Here the holes in the spring cup plate are reamed for the studs and the clutch release plates are faced off true to fit against the bearings.

The front release plate carries the studs on which the driving plates are mounted, the studs being pressed into place tightly in the holes and then electrically welded on the outside. Great care is taken during this operation to see that the studs are at exact right angles to the plate, sixty degrees apart, so that the clutch plates will slide smoothly on the studs.

The spring cups are also electrically riveted on the spring cup plates.

The asbestos heat proof material with which the clutch plates are faced comes to the factory in the form of rings already cut to size, and after the discs have been straightened by hand to insure perfectly flat, even surfaces the asbestos material is riveted to the discs on a specially designed riveting machine. After the riveting operation the discs are run through a powerful rolling machine to remove any irregularities in the surface of the asbestos material.

Each of the driven discs is fitted with welded reinforcements where the slots fit over the clutch hub, and these slots are broached

out and the reinforcements machined off to make them smooth and uniform.

The steel clutch hub has a splined hole in the center to fit the splined end of the clutch gear. The hole is first drilled out and reamed and then the splines are cut in on an extremely accurate broaching machine. The hub is then placed in a machine that turns the outside diameter of the hub and faces off the six wings in one operation. The hub is then counter bored perfectly concentric with the spline.

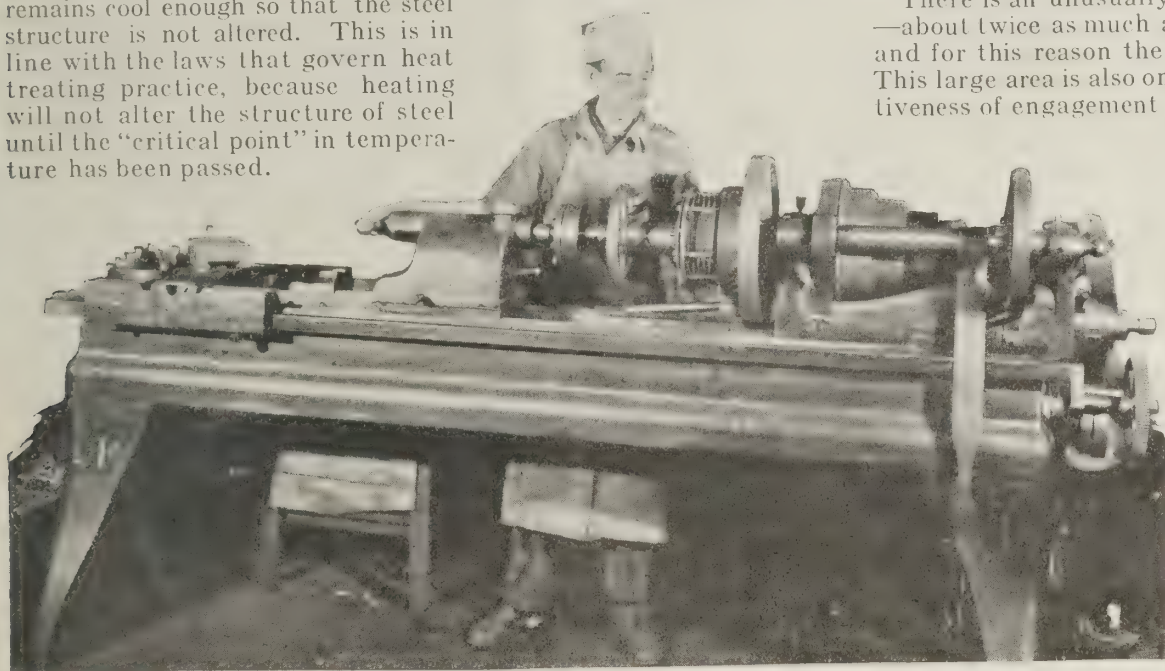
WHEN completed, the clutch hub is sent to the heat treating department for a special hardening operation in cyanide. It is necessary for the extensions, or wings, of the hub to be hard to resist wear, while the core should remain soft and tough. This is accomplished by placing several hubs on a revolving rod that permits the outer ends of the wings to just dip in the hot cyanide as they revolve, raising them to a sufficiently high temperature to give them great hardness when quenched, while the body of the hub remains cool enough so that the steel structure is not altered. This is in line with the laws that govern heat treating practice, because heating will not alter the structure of steel until the "critical point" in temperature has been passed.



The component parts of the Buick clutch come to this assembling table, where they are assembled on specially designed apparatus that holds the parts in place and depresses the clutch springs until the nuts and lock washers are all firmly screwed down

The only adjustment ever required is made by moving the lock nut and the adjusting nut on the clutch release rod, and this need not be done unless the clutch, after long use, shows signs of slipping.

There is an unusually large friction area in the Buick disc clutch—about twice as much as is actually required to carry the load—and for this reason the wear in normal use is very slight indeed. This large area is also one of the big reasons for the ease and positiveness of engagement for which this clutch is remarkable.

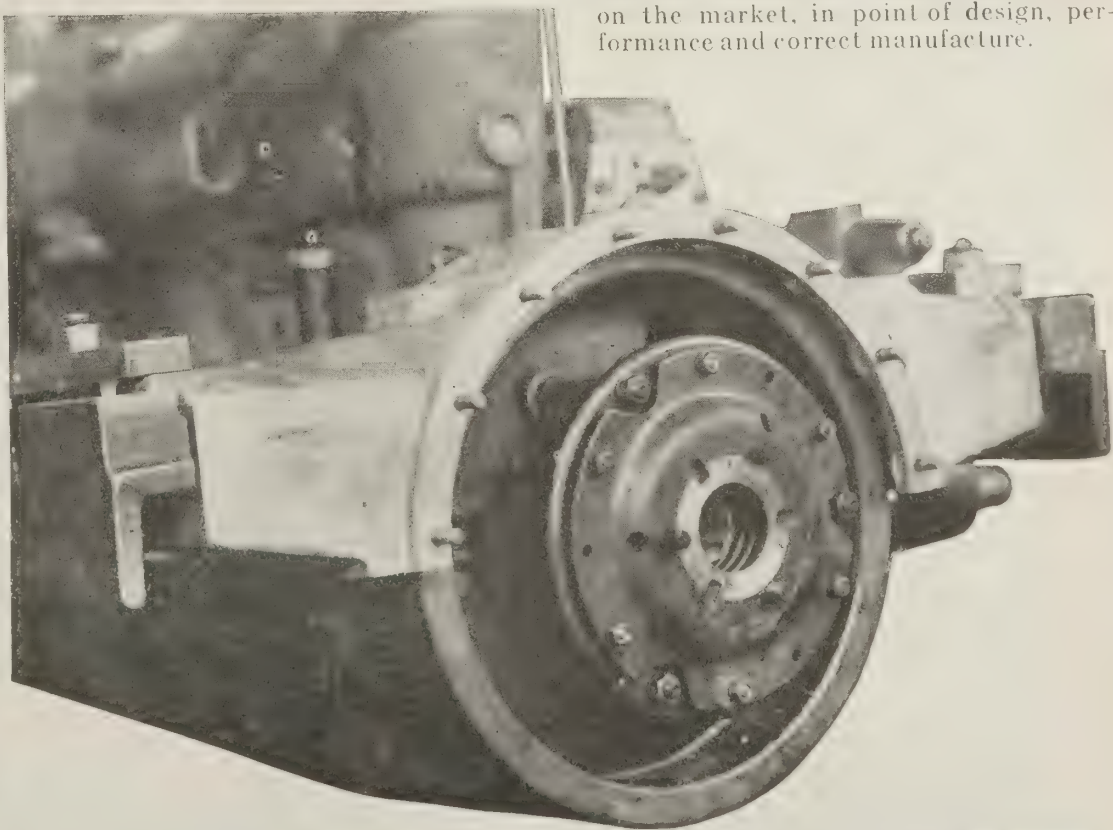


The last step in building the Buick clutch is to put it in this powerful machine in such a manner that the full tension of the clutch spring is exerted against the discs, holding them firmly together. As the machine revolves, the surfaces of the discs are polished against each other until they are all absolutely smooth and true

The clutch is now ready to assemble, and this is accomplished on a specially designed stand. The alternate driving and driven discs are put in place on the proper studs and wings, the heavy spring inserted and held down by means of a special device while the nuts are applied to the ends of the studs projecting through the spring cup plate.

In spite of all the precautions that have been taken so far, the clutch surfaces are not yet smooth enough to pass the rigid inspection that is to follow, and a most ingenious method of smoothing them has been devised. The clutch is placed in a machine and hooked up as if it were in a car, the surfaces of the discs being firmly held together by the heavy spring. The machine is then set in operation and the clutch made to slip by the tremendous power exerted against it. At the end of this operation a little pile of asbestos and steel may be seen on the machine below the clutch. This material has been literally ground off the pebbled surface of the asbestos lining, smoothing it to a perfectly flat surface and giving the full benefit of the friction area of the clutch.

The next step is the final inspection, after which the clutch is placed in a conveyer and taken to the point where the finished motors are being carried on overhead cranes to the block test. Here it is installed on the rear of the flywheel by simply bolting it to the clutch studs with which the flywheel is furnished.



The finished Buick clutch is fastened to the flywheel of the motor by three stout bolts on the flywheel. The clutch gear of the transmission fits into the splined center of the clutch hub, connecting the clutch with the transmission system

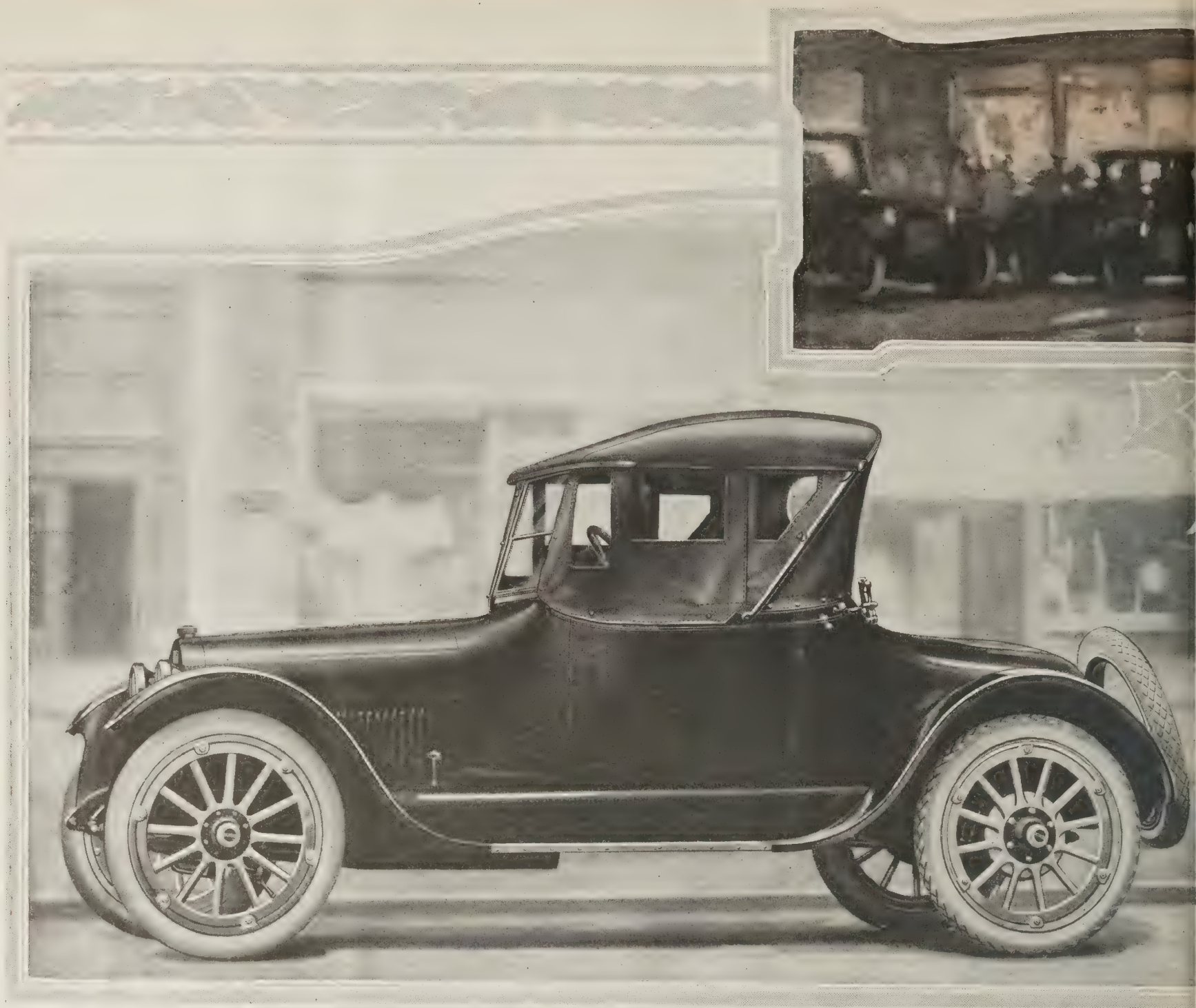
TOO much emphasis cannot be laid upon the smoothness and efficiency of this Buick clutch. A very light pressure on the clutch pedal is sufficient to disengage it, so that in crowded traffic or wherever much shifting of gears is necessary the clutch can be operated repeatedly without tiring the foot of either men or women drivers. And for the reason that the clutch is so easily disengaged, the Buick driver should not cultivate the practice of driving with his foot on the clutch pedal. The clutch pedal is quickly and conveniently reached when necessary, and at other times the clutch should be left to perform its functions without the handicap of relieving a large portion of the spring tension.

Two grease cups supply all the lubrication required by the Buick clutch. There is no oil carried in the clutch case, because it is a dry disc clutch.

THE Buick Motor Company takes advantage of every possible means to provide its owners with highly developed mechanism throughout the Buick car, from the standpoint of ease and convenience of operation as well as long life and good performance.

A large part of the work done in the engineering department is in the nature of research and experimenting to develop the various mechanical units to the very highest possible state of efficiency.

In this way, no detail of the cars is slighted, but all are improved from season to season as experience dictates. The experimental work in the engineering department on clutches finally evolved the patented construction which has been described above and which gives the Buick clutch marked superiority in all the qualities that go to make up a good clutch. It is not surpassed by any clutch on the market, in point of design, performance and correct manufacture.



The Buick Three-Passenger Open Model H-Six-44

CHOOSE YOUR CAR

*Value is a comparative thing, re-
purchase price of an article and*

FOR the man or woman who requires a car of limited passenger capacity, the Buick Motor Company builds two body types—an open and a closed model. Both cars possess a service value that is very high.

The three-passenger Open Model H-Six-44 is a splendid example of the Roadster type, suitable for miscellaneous use. One wide seat extending across the body gives plenty of room and comfort for three adults, and the snug-fitting side curtains, when in place, convert this roadster into a semi-closed car.

B



The Buick Four-Passenger Closed Model H-Six-46

TO FIT YOUR NEEDS

*representing the balance between the
the service it is expected to render*



THE four-passenger Closed Model H-Six-46, while built on the same chassis and powered with the same Buick Valve-in-Head motor as the open car, has a wider range of service on account of its closed body.

No extremes of heat or cold handicap the owner of this efficient closed car, because the easily adjusted windshield and door windows may be instantly regulated to suit the comfort of the occupants. In addition the closed car is equally appropriate for business or social use.



Mr. Frank T. Pemberton is a stock raiser in Iowa Falls, Iowa. "I just want to tell you how I appreciate the service rendered by the Buick Six I purchased about three years ago," he writes. "I have driven it between thirty-five and forty thousand miles with a very light repair bill. I find it is much easier on tires than any other car I have driven. On good roads it will average from 20 to 22 miles on a gallon of gasoline. I have never had the car in a position where it did not seem to have an abundance of power and speed. I use a spring wagon trailer with an attach-

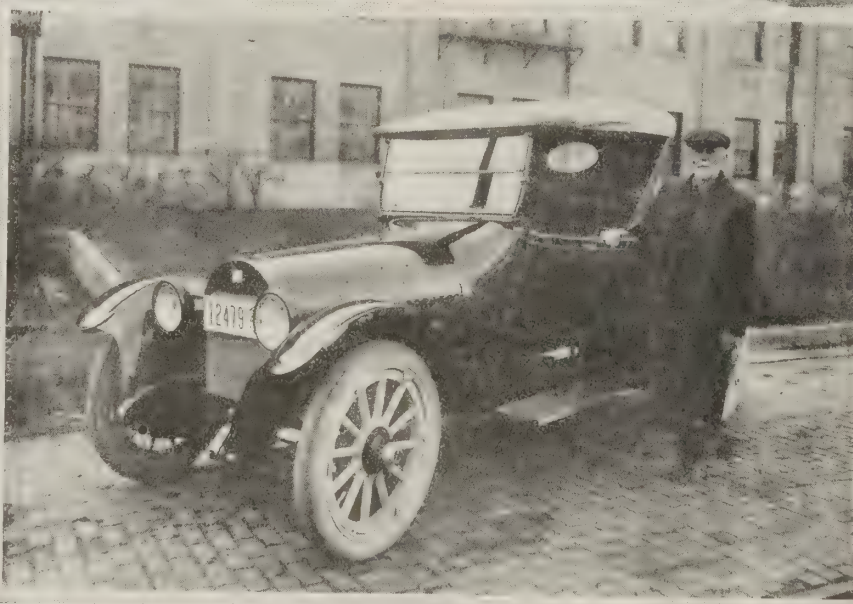
ment and its guaranteed capacity is a ton. My attachment will also couple any common wagon tongue, and in this manner I can haul one and one-half tons where the roads are good. I have built a complete set of farm buildings this season, hauling almost all my lumber, tile, brick and cement in this manner, or can take to town a load of hogs or grain and return with ground feed, coal or whatever is needed. Today I cannot detect but that it drives with the same efficiency as when new."



Allen Brothers, Buick dealers in Elkader, Iowa, have the largest and most complete garage in northeastern Iowa. The building is 60 x 125 feet, equipped with fine showroom, shop, paint shop, electric elevator, turn table, etc. Allen Brothers have been successful Buick dealers since 1910, and attribute much of their success to the powerful and consistent performance of the Buick Valve-in-Head motor



"After having tried out several makes of cars to stand up under the terrific test of driving 24 hours a day in testing Standard Four tires, we have settled upon the Buick. The two cars in this picture, a Buick 36 and a Buick 55, are running 24 hours a day. The 55 up to the present has passed the 60,000 mile mark and was a second-hand car when we started running it." Standard Four Tire Co., Keokuk, Iowa.

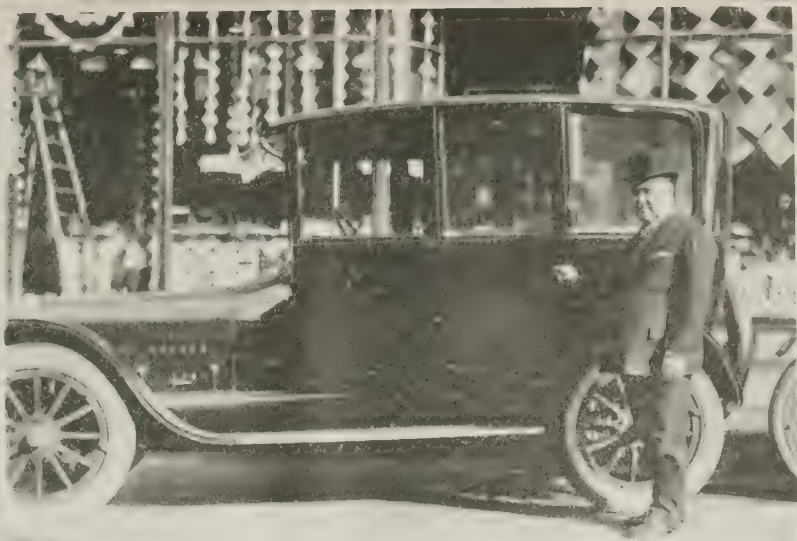


"All you have to do is keep her in trim. Move your big toe just a little more, and away she goes." That's what Mr. J. S. Fox, of Salina, Kansas, says about the Buick. He ought to know, because he has had five of them—a Model 10, Model 27, which his son is still driving, a Model D-Six-45, Model E-Six-46 and the latest a Model H-Six-44 which he drove home from the factory, 1145 miles "without a puncture and without having a wrench out of the tool kit." Mr. Fox is 73 years old and says his principal occupation is riding in Buicks. "I hope to live to own six more," he adds.





"My daughter and myself have driven our E-46 Buick four thousand miles with excellent results. Consider this machine a valuable asset to our business." John P. Cook, Fairbury, Illinois.



"I have found my Buick Six Sedan admirably adapted to my business, both as a summer and a winter car. It has more than filled my expectations in every particular." Dr. J. A. Moore, Bloomington, Illinois.



"The Buick car I bought six years ago has given me entire satisfaction. My business is that of traveling salesman and I am going all the time. My Buick always takes me there and back. When I buy another automobile, if I ever have to, it will be the Buick."—P. M. Pope, Richmond, Kentucky.



"I am pleased to advise you that we are using three of your Buick cars—D-35 Light Delivery, C-37 Touring Car and Big 4 truck with hearse body mounted, each of which is giving the very best of service. If I were in need of more cars I assure you they would be Buicks."—Fred Hermann, Stockton, Illinois.



Mr. R. C. Baldwin, President of the Bloomington, Illinois, Chamber of Commerce, writes: "The writer was induced to buy a Buick car because of its advantages in saving time, and we have found that the use of the car has resulted in more business and enabled us to handle our business with better satisfaction. This is the fourth Buick car that we have owned, and this demonstrates our regard for the Buick."



Here's a picture of the garage and salesrooms of the Franklin Auto Supply Company, of Franklin, Tennessee. This concern maintains a splendid service organization that insures complete satisfaction to every Buick owner in Franklin.



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



The Storage Battery and Its Care

THE storage battery consists of three hard rubber cells in which are placed alternately positive and negative lead plates in a solution of sulphuric acid and water, called electrolyte. Through chemical action between the plates and the solution, electrical energy from the generator is stored in the battery and is used for cranking the motor and to supply current to the lamps when the motor is not running. The battery is always directly connected to the generator and serves to control the voltage of the electrical system within safe operating limits.

When fully charged, the battery will show from 1.275 to 1.300 with the hydrometer syringe. When discharged it will read 1.150 or under.

Keep the battery charged. Take hydrometer readings frequently. If you find the specific gravity falling gradually, drive your car for longer periods between starts and use your lights less. The generator output is adjusted at the factory within limits that have proven generally satisfactory. But in the event that special conditions arise where the charging rate is not sufficient, have an expert electrical man increase the charging rate of the generator by adjusting the position of the third brush.

If you have forgotten to turn off your lights or ignition switch, or if for any other cause your battery has become completely discharged, have it removed from the car and recharged at a reliable battery service station.

Keep your battery filled with pure distilled water to the level shown in the cut and never let the level of the electrolyte fall below the

tops of the plates; otherwise the plates may become badly damaged. When filling U. S. L. batteries, keep your finger over the vent hole, as directed in the more detailed instructions supplied with your car. This will prevent

spilling the solution and weakening the battery action.

Keep your battery properly charged and there is little danger of freezing. The electrolyte freezes at the following temperatures:

1.300 specific gravity, 90° below zero

1.215 specific gravity, 40° below zero

1.180 specific gravity, zero

1.150 specific gravity, 12° above zero

Never add water to your battery in winter without running the motor to charge it immediately. This will mix the water with the electrolyte and prevent the danger of freezing and bursting one or more cells.

If you plan to lay your car up for the winter, the storage battery will require special care if you want it to be in good condition when it is to be used again. The best way is to store it with a reliable service station. If it is to be left in the car, disconnect the wiring to prevent the possibility of leakage in the circuit, clean the battery thoroughly to prevent leakage on account of dirt, charge the battery once each month and watch the level of the electrolyte. Also be sure that at no time is the temperature low enough to freeze the battery.

In general, observe the following rules:

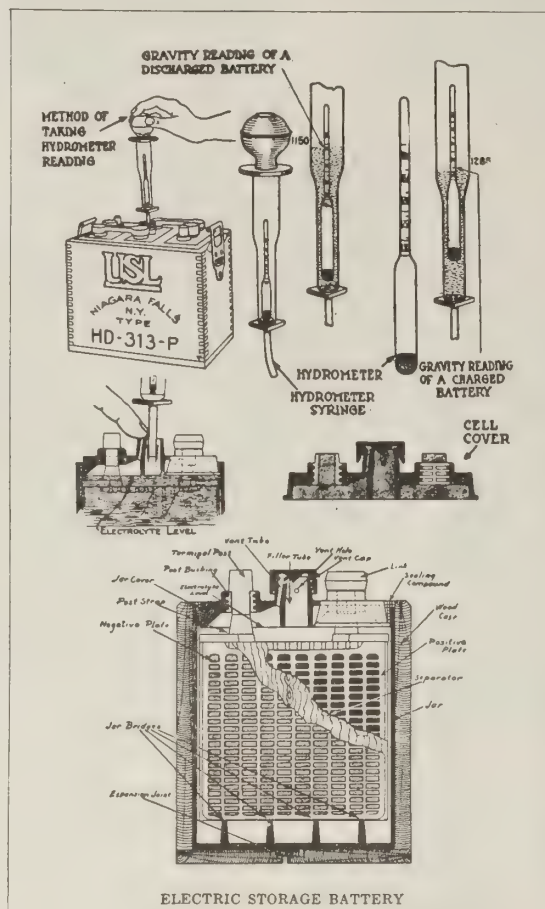
Keep the battery charged.

Keep the plates covered with solution.

Keep the battery clean and all connections tight and clean.

Do not attempt to run your car without having the battery connected with the generator.

Read your instruction book and ask the nearest U. S. L. station for a copy of their booklet, "The Mystery of the Black Box," which contains interesting and instructive data on the storage battery.



Owners Highly Pleased with Buick Serviceability

Low Operating Cost

A LETTER dated November 5th from A. W. H. Neihok, superintendent of the Champlain Realty Company, of Rochester, Vermont, encloses an interesting table covering the cost of operating his Buick Model E-Six-44 7,200 miles. The table includes \$201.68 for extra equipment and for a complete set of cord tires which have not yet been put in service. There is also a charge of \$31.50 for storage and washing and \$120.87 for gasoline and oil. The total is \$370.08, making the average cost per mile 5.14 cents. Mr. Neihok averaged 15.9 miles per gallon of gasoline and 738 miles per gallon of lubricating oil.

He says: "Two of the tires that originally came with the car are still in use. The four Goodyear cord tires I have just purchased I figure will put the car in better condition as to tires than when I first started using it."

A Necessity on the Farm

I REGARD my Buick Model 35 a real necessity in dispatching the work on my farm." This is the statement of Mr. H. J. Hess, breeder of Aberdeen-Angus cattle, Waterloo, Iowa. "For business and utility," he continues, "I consider the Buick in a class by itself. In these trying days when farmers are all short of help, one can make the necessary trip to town and about the farm in a few minutes, conveying articles and doing errands that otherwise would consume a great length of time."

"For instance, just today I conveyed from town a crate of window sash, an article of furniture, the necessary groceries and some articles of hardware, all in a few minutes, when otherwise it would have taken the best part of the day."

The Buick Line for 1919



Three Passenger Open Model, H-Six-44	\$1595
Five Passenger Open Model, H-Six-45	1595
Four Passenger Closed Model, H-Six-46	2085
Five Passenger Closed Model, H-Six-47	2195
Seven Passenger Open Model, H-Six-49	1885
Seven Passenger Closed Model, H-Six-50	2585

Buick Motor Company
Flint, Michigan

All that Could be Desired

CHAS. S. JAMES, M. D., of Centerville, Iowa, sums up his four-passenger Buick Coupe, as follows:

"I have found it very satisfactory.

"Capacity, ample.

"Mechanically—correct.

"In service—all that could be desired in continued daily winter, spring and summer use.

"In appearance and appointment—'nifty' in every respect."

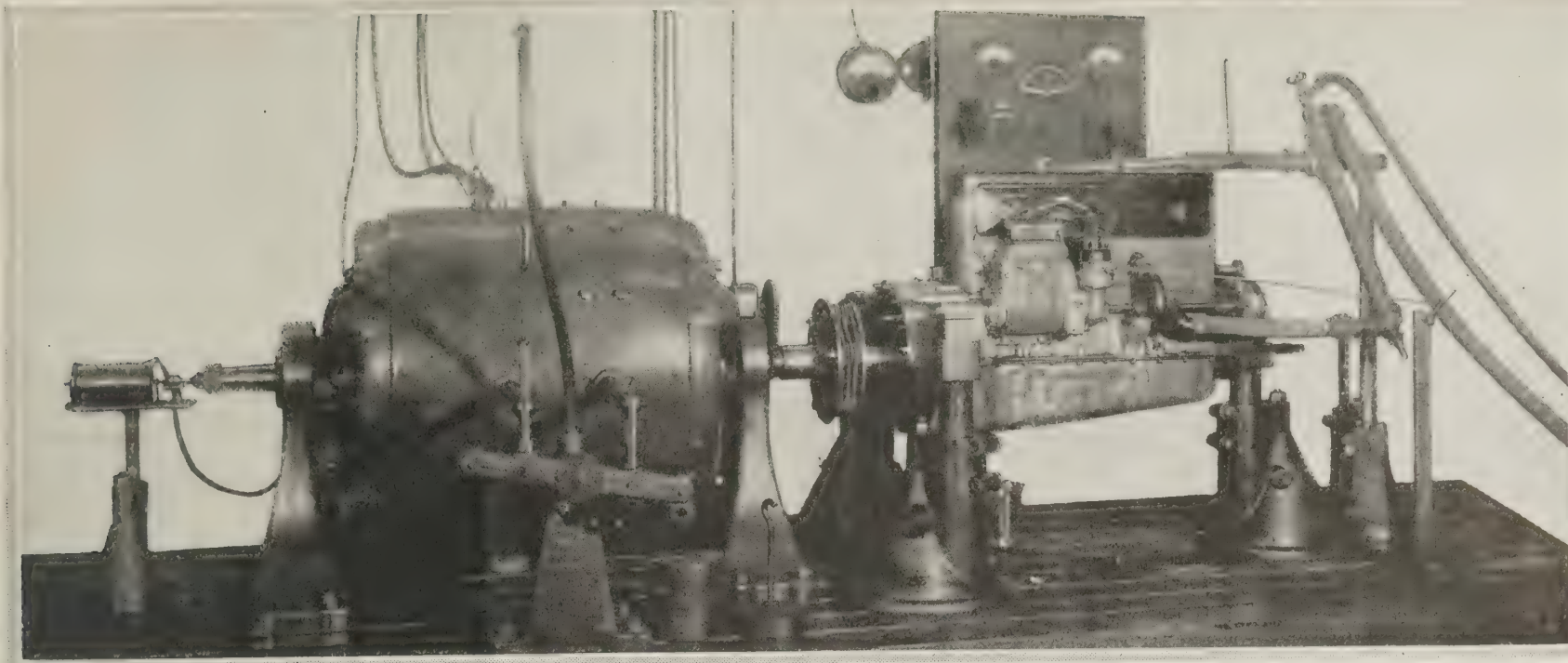
Will Certainly Buy Another

I HAVE been reading the Buick Bulletin," writes Mr. M. N. Harvey, of Beloit, Kansas, "and notice several people who seem to think they have had good service from a Buick at 10,000 miles. I bought a Buick D-Six-45 on August 1, 1917, and have driven it 26,387 miles to date (October 28). I have driven this car in Oklahoma, Kansas, Missouri, Nebraska, Iowa and South Dakota, and have never found a road that it would not travel with ease when weather conditions were at all decent. I get from 10,000 to 14,000 miles from tires and average about 17½ miles to the gallon of gasoline. I find from actual figures that it costs me less to drive this Buick than it did to drive two different makes of popular priced light cars which I formerly used; besides I can make much faster time with far greater ease. The car seems to run as well as ever at this time, but if it ever does wear out I certainly will buy another, as the Buick is good enough for me."

Five Thousand Pounds Overland

MR. CHARLES LATSCH, of Lake Mills, Wisconsin, runs the City Bus Line. "I have a bus body," he writes, "which carries 27 passengers, mounted on a four cylinder, 1500 pound Buick C-4 truck chassis. The body weighs 3,000 pounds and I often carry from 6,500 to 7,000 pounds, including body, passengers and baggage, which is an overload of at least 5,000 pounds. I have never experienced any trouble. This bus is in constant use and renders excellent service."

"I also use a C-37 Buick for my business, which proves very satisfactory, and I cannot say too much for the Buick."



WHAT IS HORSEPOWER?

WITH the advent of the automobile it soon became necessary to have some standardized method of measuring the power of a gasoline engine and expressing the result in terms that would convey an intelligible meaning.

The standard settled upon was the arbitrarily fixed unit horse-power which was already in use for expressing the power of steam and other engines. As applied to motors, one horse-power is the power required to lift 33,000 pounds one foot in one minute.

But because of the peculiar mechanical laws governing its performance, the power of an internal combustion engine varies at different motor speeds, rising sharply as the motor speed is increased until a certain number of revolutions per minute have been attained and then falling off immediately after the maximum has been reached.

So for this reason, the National Automobile Chamber of Commerce has adopted what was formerly known as the A. L. A. M. rating, namely, $\frac{D^2 \times N}{2.5}$. D is the cylinder bore in inches, N the number of cylinders, and 2.5 a constant, based on the average view of eminent engineers as to a fair, conservative rating for a four-cycle motor at one thousand feet per minute piston speed.

Upon analysis, it will be seen that this method of computing horse-power will of necessity be quite inaccurate in many cases. For one thing, it does not take into consideration the stroke of the motor, the size of the valves, the valve timing nor many other features of design that have a great bearing on the actual power that a motor will develop. Or rather, to put it in another way, it places all motors on the same plane as far as these important items are concerned.

Further, this arbitrary formula tells practically nothing that the motor car owner wishes to know on the vital subject of performance. Actual testing against the electric dynamometer tells a great deal more to the experienced engineer, because from it he can make up a chart showing the power curve of the motor, illustrating its power at the different speeds in the "usable" speed area. For example, two motors might show the same maximum and minimum power at high and low speeds on the chart, yet the difference in the power curves throughout the intermediate speeds may show a difference in favor of one motor of several horse-power, which would give that motor an immense advantage in hill climbing, heavy pulling and ordinary driving performance.

This is really where the fine points of design come into play, both in performance and economy. The Buick Valve-in-Head motor, as

any Buick owner will gladly attest, has a power curve that adapts it admirably to miscellaneous driving and gives it exceptional pulling power over a wide range of motor speeds.

The development of this motor has been going steadily on for nearly twenty years, and no phase of design has been neglected in the effort to improve it in every way possible. It is the consistency with which this work has been carried out, improving every detail of design in every possible way, that has made the Buick motor what it is today. But back of all these things is the Valve-in-Head principle of design, which, more than any other individual feature, explains the power and economy of the Buick motor.

In discussing internal combustion motors, it is first necessary to get one fact firmly fixed in mind, namely—that they are all heat engines. In other words, they derive their power by converting the fuel used in operating them into heat, and it is the expansion of the heated gases resulting from each explosion in the cylinders that supplies the impulses necessary to run the motors.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be.

In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water jacketed space there is in a motor, the greater the thermal (heat) efficiency will be, because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases, both inlet and exhaust valves form a part of the combustion chamber, where the heat is greatest, and in consequence it is necessary to water jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. And this pocket is of necessity water jacketed.

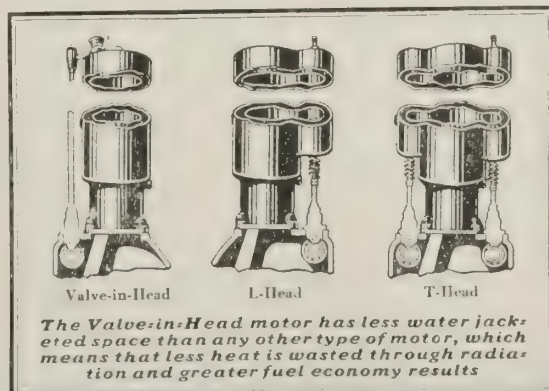
In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water jacketed, it follows that the Valve-in-Head type affords the absolute minimum of water jacketed space that is possible to be secured for any given size of cylinder.

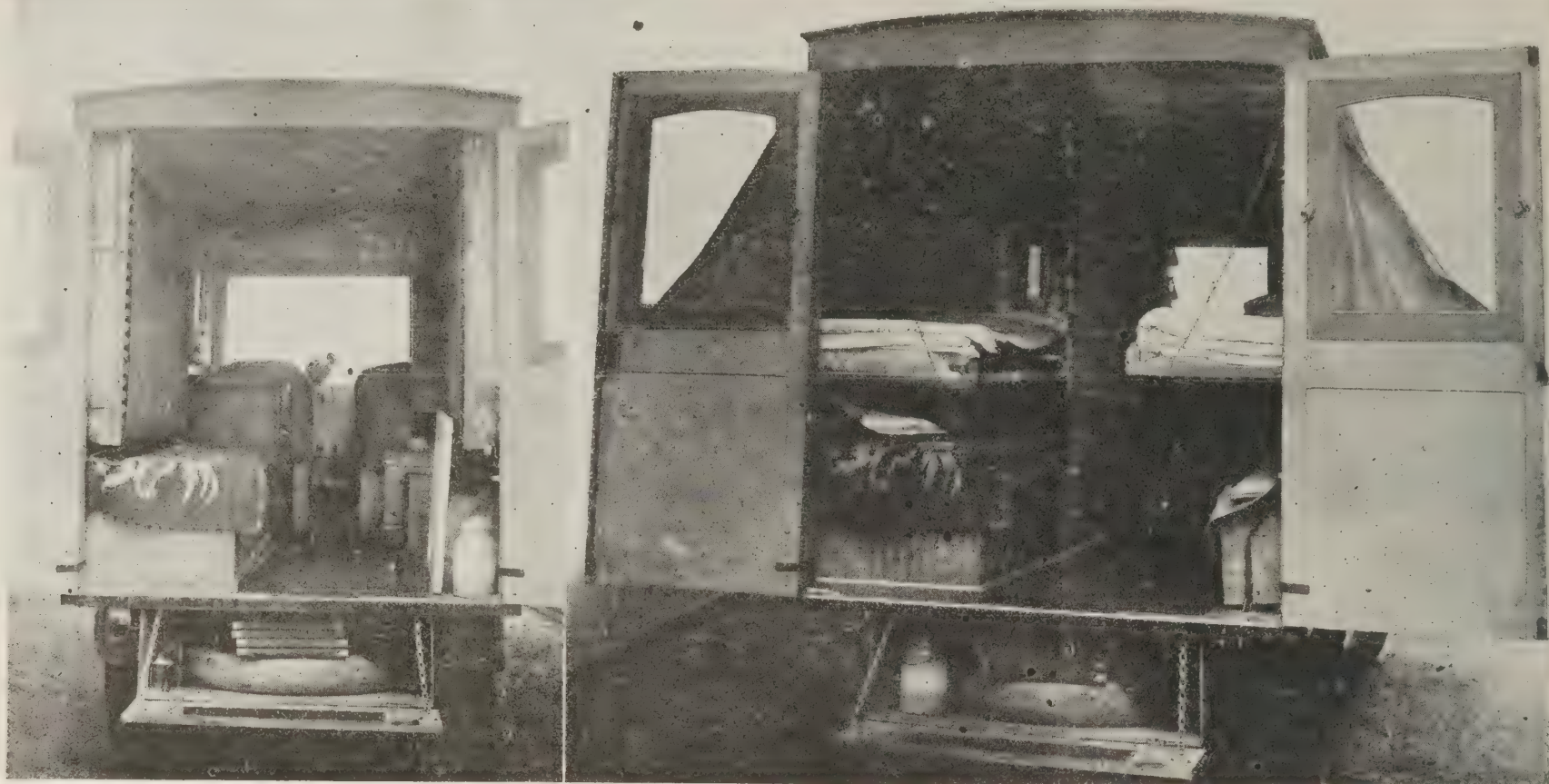
Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the large valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is much more perfect in the Buick motor because the incoming charges are purer and the electric spark has a shorter distance to travel in the brief instant of time that it must do its work in igniting the mixture.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other types of motors, a quicker ignition of the charge and a smaller loss of heat through the water jackets. The sum of these advantages is more power with less gasoline consumption.



TOURS BY BUICK OWNERS



This Model D-4 Buick Light Delivery is owned by Philip Ginsberg, of Monongahela, Pennsylvania, who has fitted it up as a traveling hotel and is now touring the continent with his family. There is hardly a touring convenience

lacking in this car. Roomy berths divided by a curtain, a couch for daytime comfort, complete kitchen conveniences, including stove, and ample storage space for all kinds of luggage, make this car a model of its kind.

From Dallas to Denver

MR. A. P. JOHNSTON, Manager of the Southern Implement Company, Dallas, Texas, writes the following account of his recent trip to Denver in his Model E-Six-49 Buick:

"Our party consisted of my wife, my two children and myself, and we carried a complete camping equipment. The car was heavily loaded, weighing in the neighborhood of forty-five or forty-six hundred pounds. I am frank to say that could we have anticipated the condition of the roads and the road trouble which we encountered on this trip, we would have been mighty glad to have stayed at home.

"I cannot conceive of any more difficult test to which a car could be put than the trip made at that particular time. The roads from here to Amarillo were in worse shape than for many years on account of the prolonged drouth. We struck some mud going up, and it took us seven days to make the trip through to Denver, which is normally made in four or five days.

"We spent several weeks in the mountains, pulling every conceivable kind of a road, and made miles and miles in intermediate and low.

"We had our hardest roads on the return trip. We ran for four days in rain and mud, pulling over two hundred miles with chains. We bogged down three times on account of not having traction enough, but the minute we could get a firm foundation under the rear wheels we came out a-flying. In spite of our heavy load, we had ample power to pull anything we encountered. It was only when our differential dragged on account of the ruts that we got stuck.

"Owing to bad roads we had considerable tire trouble, but had absolutely no engine trouble. The only expense to the car on the entire trip of 2,480 miles was a new fan belt and one brake lining which burned out on account of my carelessness.

"On the return trip, owing to delay caused by bad weather and roads, I was very anxious to get home and we did not spare the car. The roads got better as we came into our own State and the last three days we drove 180, 215 and 254 miles respectively. The last day's drive from Roscoe to Dallas was made via Breckenridge and Mineral Wells and over some of the roughest roads in the State.

"I expected any time to break a spring, but am glad to say that the car came through in fine shape without any breakage whatever, and apparently it is in as good mechanical condition as when we started.

"In spite of the fact that we pulled at least one hundred miles of mountain roads on low and intermediate and over two hundred miles of mud—adobe at that—and in spite of our heavy load, we averaged a little better than thirteen miles per gallon of gas for the entire trip.

"If you ever have a prospective customer who is in doubt about the car having sufficient power to meet all emergencies, send him to me."

From Flint to Los Angeles

MR. F. M. SCOTT writes from Los Angeles: "The Buick Six which I drove out here is a wonder and came through everything in fine shape. I came over the 'Old Trails Route,' which you may or may not know is the worst lot of assembled ruts, chuck holes, rocks and mud of any road known to auto drivers. I struck cloudbursts all through New Mexico and Arizona, and at its best this route through Arizona is not fit to drive a decent pair of oxen over, to say nothing of a car.

"In the mud near Kingman, Arizona, I left over twenty cars of high and low degree mired, and so far as I know they may be there yet. But the 'Lil' ol' Buick' simply plowed through with never a miss and I got here last week (the last week in August).

"I took the car to the Buick service station and told them to go over it carefully and put in order anything and everything that needed it. When I went down they presented me with a bill of \$2.25 for time spent in examination only, and reported there was not even a nut or a screw loose. 3,509 miles is quite a trip, even over good roads, but to me that distance over the kind I struck and not loosen even a nut is sure some test of a car. Over the Mojave desert I ran 167 miles on 9 gallons of gas, or a fraction better than 18½ miles to the gallon. In climbing hills—well, all I can say is I never knew there were any hills—she simply sailed up them like a bird. There is *nothing* one cannot do with this car that can be done by any car—and I can do it better."

Ohio to West Virginia

E. G. HORTON, M. D., of Columbus, Ohio, is the owner of a Buick Model E-Six-45 Touring Car, and sends the following account of a trip he made in it last summer:

"On July 12, 1918, my family and a guest (five adults), with baggage, drove from Columbus, Ohio, to Charleston, West Virginia. The speedometer readings at start and finish were, respectively, 4,395 and 4,605, making a total run of 210 miles; which distance was also confirmed by the total of the trip readings between the larger cities.

"The gas tank was filled on starting and not again until Charleston was reached. In filling at Charleston, no more gasoline could possibly be put in than had been used, making a definite test. The amount put in at Charleston on refilling was 10½ gallons, giving an average for the trip of just twenty miles to the gallon.

"My daughter, Mildred, drove the first 170 miles over roads that were excellent practically all of the way. I drove the last forty miles over mountain roads that were good except that quite frequently there were cross ruts, rocky steps, small stream fords or mud-holes, necessitating a slowing down to second and first speeds. We emerged from one mud-hole with mud on both running boards.

"The return trip was made over another route with much less desirable driving roads, and the average mileage fell a little below nineteen miles to the gallon.

"The service requirements for the round trip of a little over 400 miles consisted in tightening two taps on the top, putting in oil, water and gasoline once each, turning a few grease cups and washing the car at Charleston. Neither engine nor tires was touched."

The Ideal Car for Business

MR. H. R. BLACK represents C. S. Christensen Company, flour manufacturers, with headquarters at Lake Mills, Wisconsin. He writes: "I cover the greater part of the State of Wisconsin and find my Buick E-Six-45 enables me to make better time than if I had to wait for trains. It has given me excellent satisfaction; economical on gas and oil, easy on tires. It makes the ideal car for business."



Modern business demands modern equipment—and what time-saving machinery has done for industry in general, the motor car has done for the individual.

The man who has outside business to transact likes to do it as efficiently as if he were behind his own desk. The right motor car makes this possible for him. Buick Valve-in-Head motor cars

are built, not only to afford the maximum of comfort and convenience, but to give such freedom from unnecessary delays that the owner's time may be utilized to the utmost production advantage.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities—Dealers Everywhere



The Farmer needs a car that he can use every day in the year, if necessary, with the same degree of usefulness and dependability that he exacts from any of his other equipment. It is a really big factor in his success.



Buick Valve-in-Head motor cars are bought by farmers in large numbers. Each year their popularity grows as farmers learn more fully the possibilities that lie in a really good motor car for increasing their revenues as well as for adding to their daily comfort.

BUICK MOTOR COMPANY, FLINT, MICHIGAN
Pioneer Builders of Valve-in-Head Motor Cars

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THE Buick BULLETIN

Published by the Sales Department
of the Buick Motor Company

JANUARY 1919

IS A COPY



In this Issue—REVISED BUICK PRICES—Pages 5 and 16



Ring out, wild bells, to the wild sky,
The flying cloud, the frosty light:
The year is dying in the night;
Ring out, wild bells, and let him die.

Ring out the old, ring in the new,
Ring, happy bells, across the snow:
The year is going, let him go;
Ring out the false, ring in the true.

Ring out the grief that saps the mind,
For those that here we see no more;
Ring out the feud of rich and poor,
Ring in redress to all mankind.

—From Tennyson's "In Memoriam"

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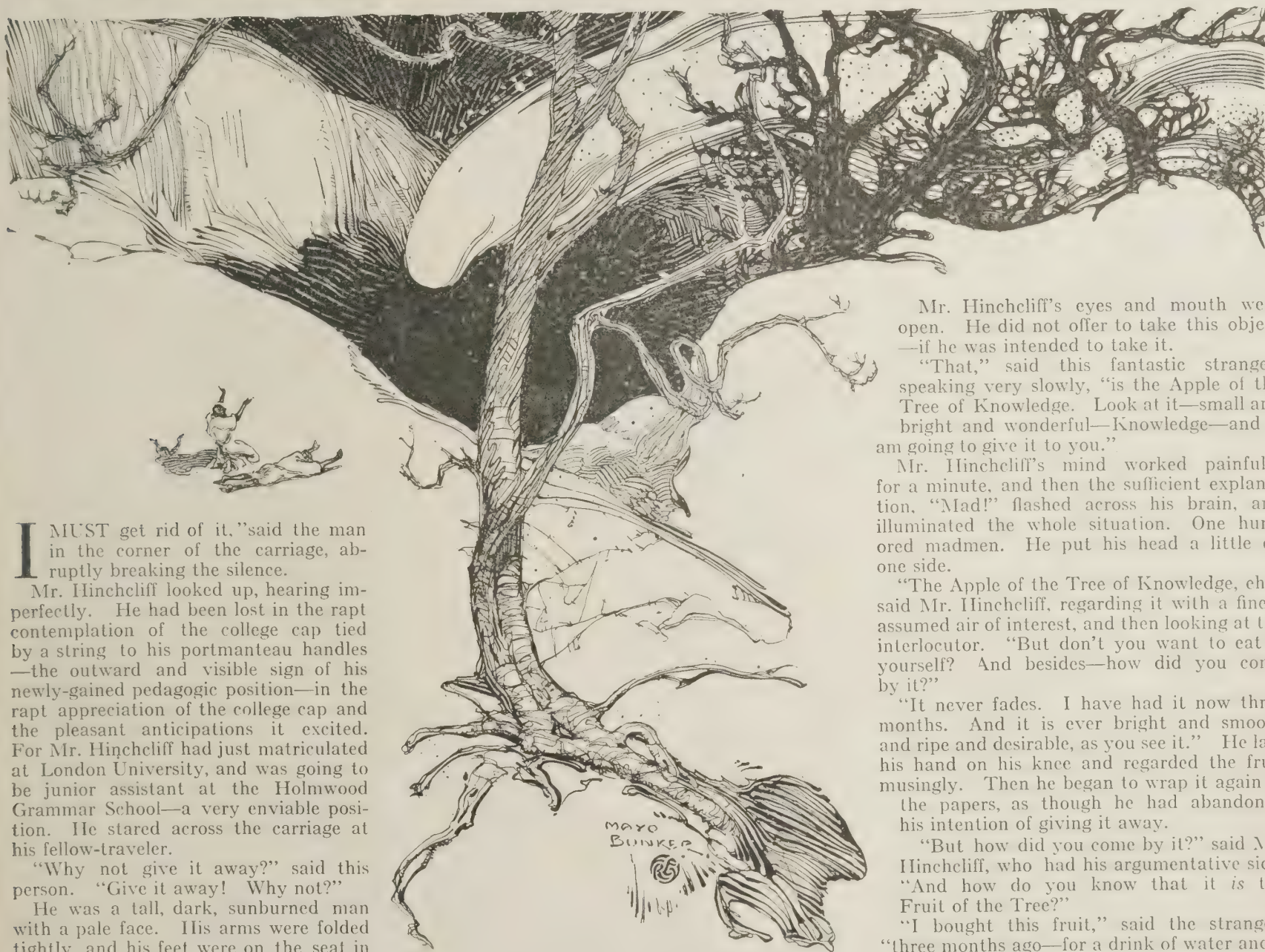
Flint, Michigan, U. S. A.

Number One

THE APPLE

A STRANGE STORY BY
H. G. WELLS

Illustrations by Mayo Bunker



I MUST get rid of it," said the man in the corner of the carriage, abruptly breaking the silence.

Mr. Hinchcliff looked up, hearing imperfectly. He had been lost in the rapt contemplation of the college cap tied by a string to his portmanteau handles—the outward and visible sign of his newly-gained pedagogic position—in the rapt appreciation of the college cap and the pleasant anticipations it excited. For Mr. Hinchcliff had just matriculated at London University, and was going to be junior assistant at the Holmwood Grammar School—a very enviable position. He stared across the carriage at his fellow-traveler.

"Why not give it away?" said this person. "Give it away! Why not?"

He was a tall, dark, sunburned man with a pale face. His arms were folded tightly, and his feet were on the seat in front of him. He was pulling at a lank, black mustache. He stared hard at his toes.

"Why not?" he said.

Mr. Hinchcliff coughed.

The stranger lifted his eyes—they were curious, dark-gray eyes—and stared blankly at Mr. Hinchcliff for the best part of a minute, perhaps. His expression grew to interest.

"Yes," he said slowly. "Why not? And end it."

"I don't quite follow you, I'm afraid," said Mr. Hinchcliff, with another cough.

"You don't quite follow me?" said the stranger, quite mechanically, his singular eyes wandering from Mr. Hinchcliff to the bag with its ostentatiously displayed cap, and back to Mr. Hinchcliff's downy face.

"You're so abrupt, you know," apologized Mr. Hinchcliff.

"Why shouldn't I?" said the stranger, following his thoughts. "You are a student?" he said, addressing Mr. Hinchcliff.

"I am—by correspondence—of the London University," said Mr. Hinchcliff, with irrepressible pride, and feeling nervously at his tie.

"In pursuit of knowledge," said the stranger, and suddenly took his feet off the seat, put his fist on his knees, and stared at Mr. Hinchcliff as though he had never seen a student before. "Yes," he said, and flung out an index finger. Then he rose, took a bag from the hat-rack, and unlocked it. Quite silently he drew out something round and wrapped in a quantity of silver-paper, and unfolded this carefully. He held it out toward Mr. Hinchcliff—a small, very smooth, golden-yellow fruit.

Mr. Hinchcliff's eyes and mouth were open. He did not offer to take this object—if he was intended to take it.

"That," said this fantastic stranger, speaking very slowly, "is the Apple of the Tree of Knowledge. Look at it—small and bright and wonderful—Knowledge—and I am going to give it to you."

Mr. Hinchcliff's mind worked painfully for a minute, and then the sufficient explanation, "Mad!" flashed across his brain, and illuminated the whole situation. One humored madmen. He put his head a little on one side.

"The Apple of the Tree of Knowledge, eh!" said Mr. Hinchcliff, regarding it with a finely assumed air of interest, and then looking at the interlocutor. "But don't you want to eat it yourself? And besides—how did you come by it?"

"It never fades. I have had it now three months. And it is ever bright and smooth and ripe and desirable, as you see it." He laid his hand on his knee and regarded the fruit musingly. Then he began to wrap it again in the papers, as though he had abandoned his intention of giving it away.

"But how did you come by it?" said Mr. Hinchcliff, who had his argumentative side. "And how do you know that it is the Fruit of the Tree?"

"I bought this fruit," said the stranger, "three months ago—for a drink of water and a crust of bread. The man who gave it to me, because I kept the life in him, was an Armenian. Armenia! that wonderful country, the first of all countries, where the ark of the Flood remains to this day, buried in the glaciers of Mount Ararat. This man, I say, fleeing with others from the Kurds who had come upon them, went up into desolate places among the mountains—places beyond the common knowledge of men. And, fleeing from imminent pursuit, they came to a slope high among the mountain-peaks, green with a grass, like knife-blades, that cut and slashed most pitilessly at anyone who went into it. The Kurds were close behind, and there was nothing for it but to plunge in, and the worst of it was that the paths they made through it at the price of their blood served for the Kurds to follow. Every one of the fugitives was killed save this Armenian

and another. He heard the screams and cries of his friends, and the swish of the grass about those who were pursuing them—it was tall grass rising overhead. And then a shouting and answers, and when presently he paused, everything was still. He pushed out again, not understanding, cut and bleeding, until he came out on a steep slope of rocks below a precipice, and then he saw the grass was all on fire, and the smoke of it rose like a veil between him and his enemies."

The stranger paused. "Yes?" said Mr. Hinchcliff. "Yes?"

"There he was, all torn and bloody from the knife-blades of the grass, the rocks blazing under the afternoon sun, the sky molten brass, and the smoke of the fire driving toward him. He dared not stay there. Death he did not mind, but torture! Far away beyond the smoke he heard shouts and cries. Women screaming. So he went clambering up a gorge in the rocks—everywhere were bushes with dry branches that stuck out like thorns among the leaves—until he clambered over the brow of a ridge that hid him. And then he met his companion, a shepherd, who had also escaped. And, counting cold and famine and thirst as nothing against the Kurds, they went on into the heights, and among the snow and ice. They wandered three whole days.

"The third day came the vision. I suppose hungry men often do see visions, but then there is this fruit." He lifted the wrapped globe in his hand. "And I have heard it, too, from other mountaineers who have known something of the legend. It was in the evening time, when the stars were increasing, that they came down a slope of polished rock into a huge, dark valley all set about with strange, contorted trees, and in these trees hung little globes like glow-worm spheres, strange, round, yellow lights.

"Suddenly this valley was lit far away, many miles away, far down it, with a golden light marching slowly athwart it, that made the stunted trees against it black as night, and turned the slopes all about them and their figures to the likeness of fiery gold. And at the vision they, knowing the legends of the mountains, instantly knew that it was Eden they saw, or the sentinel of Eden, and they fell upon their faces like men struck dead.

"When they dared to look again, the valley was dark for a space, and then the light came again—returning, a burning amber.

"At that the shepherd sprang to his feet, and with a shout began to run down toward the light; but the other man was too fearful to follow him. He stood stunned, amazed and terrified, watching his companion recede toward the marching glare. And hardly had the shepherd set out when there came a noise like thunder, the beating of invisible wings hurrying up the valley, and a great and terrible fear; and at that the man who gave me the fruit turned—if he might still escape. And hurrying headlong up the slope again, with that tumult sweeping after him, he stumbled against one of these stunted bushes, and a ripe fruit came off it into his hand. This fruit. Forthwith the wings and the thunder rolled about him. He fell and fainted, and when he came to his senses he was back among the blackened ruins of his own village, and I and the others were attending to the wounded. A vision? But the golden fruit of the tree was still clutched in his hand. There were others there who knew the legend, knew what that strange fruit might be." He paused. "And, this is it," he said.

It was a most extraordinary story to be told in a third-class carriage on a Sussex railway. It was as if the real was a mere veil to the fantastic, and here was the fantastic poking through. "Is it?" was all Mr. Hinchcliff could say.

"The legend," said the stranger, "tells that those thickets of dwarfed trees growing about the garden sprang from the apple that Adam carried in his hand when he and Eve were driven forth. He felt something in his hand, saw the half-eaten apple, and flung it petulantly aside. And there they grow, in that desolate valley, girdled round with the everlasting snows; and there the fiery swords keep ward against the Judgment Day."

"But I thought these things were—" Mr. Hinchcliff paused—"fables, parables rather. Do you mean to tell me that there in Armenia —"

The stranger answered the unfinished question with the fruit in his open hand.

"But you don't know," said Mr. Hinchcliff, "that that is the fruit of the Tree of Knowledge. The man may have had—a sort of mirage, say. Suppose—"

"Look at it," said the stranger.

It was certainly a strange-looking globe, not really an apple, Mr. Hinchcliff saw, and a curious glowing golden color, almost as though light itself was wrought into its substance. As he looked at it he began to see more vividly the desolate valley among the mountains, the guarding swords of fire, the strange



"No!" shouted the stranger and made a snatch for it as if to take it back.

antiquities of the story he had just heard. He rubbed a knuckle into his eye. "But—" said he.

"It has kept like that, smooth and full, three months. Longer than that it is now by some days. No drying, no withering, no decay."

"And you yourself," said Mr. Hinchcliff, "really believe that—"

"Is the Forbidden Fruit."

There was no mistaking the earnestness of the man's manner and his perfect sanity. "The Fruit of Knowledge," he said.

"Suppose it was?" said Mr. Hinchcliff, after a pause, still staring at it. "But after all," said Mr. Hinchcliff, "it's not my kind of knowledge—not the sort of knowledge. I mean, Adam and Eve have eaten it already."

"We inherit their sins—not their knowledge," said the stranger. "That would make it all clear and bright again. We should see into everything, through everything, into the deepest meaning of everything—"

"Why don't you eat it, then?" said Mr. Hinchcliff, with an inspiration.

"I took it intending to eat it," said the stranger. "Man has fallen. Merely to eat again could scarcely—"

"Knowledge is power," said Mr. Hinchcliff. "But is it happiness? I am older than you—more than twice as old. Time after time I have held this in my hand, and my heart has failed

me at the thought of all that one might know, that terrible lucidity. Suppose suddenly all the world became pitilessly clear?"

"That, I think, would be a great advantage," said Mr. Hinchcliff, "on the whole."

"Suppose you saw into the hearts and minds of every one about you, into their most secret recesses—people you love, whose love you valued?"

"You'd soon find out the humbugs," said Mr. Hinchcliff, greatly struck by the idea.

"And worse—to know yourself, bare of your most intimate illusions. To see yourself in your place. All that your lusts and weaknesses prevented your doing. No merciful perspective."

"That might be an excellent thing too. 'Know thyself,' you know."

"You are young," said the stranger.

"If you don't care to eat it, and it bothers you, why don't you throw it away?"

"There again, perhaps, you will not understand me. To me, how could one throw away a thing like that, glowing, wonderful? Once one has it, one is bound. But, on the other hand, to give it away! To give it away to some one who thirsted after knowledge; who found no terror in the thought of that clear perception—"

"Of course," said Mr. Hinchcliff thoughtfully, "it might be some sort of poisonous fruit."

And then his eye caught something motionless, the end of a white board black-lettered outside the carriage-window. "—MWOOD," he saw. He started convulsively. "Gracious!" said Mr. Hinchcliff. "Holmwood!"—and the practical present blotted out the mystic realizations that had been stealing upon him.

In another moment he was opening the carriage-door, portmanteau in hand. The guard was already fluttering his green flag. Mr. Hinchcliff jumped out. "Here!" said a voice behind him, and he saw the dark eyes of the stranger shining and the golden fruit, bright and bare, held out of the open carriage-door. He took it instinctively; the train was already moving.

"No!" shouted the stranger, and made a snatch at it as if to take it back.

"Stand away," cried a country porter, thrusting forward to close the door. The stranger shouted something Mr. Hinchcliff did not catch, head and arm thrust excitedly out of the window, and then the shadow of the bridge fell on him, and in a trice he was hidden. Mr. Hinchcliff stood astonished, staring at the end of the last wagon receding round the bend, and with the wonderful fruit in his hand. For the fraction of a minute his mind was confused and then he became aware that two or three people on the platform were regarding him with interest. Was he not the new grammar school master making his debut? It occurred to him that, so far as they could tell, the fruit might very well be the naive refreshment of an orange. He flushed at the thought, and thrust the fruit into his side pocket, where it bulged undesirably. But there was no help for it, so he went toward them, awkwardly concealing his sense of awkwardness, to ask the way to the grammar school, and the means of getting his portmanteau and the two tin boxes which lay up the platform thither. Of all the odd and fantastic yarns to tell a fellow!

His luggage could be taken on a truck for sixpence, he found, and he could precede it on foot. He fancied an ironical note in the voices. He was painfully aware of his contour.

The curious earnestness of the man in the train, and the glamour of the story he told, had, for a time, diverted the current of Mr. Hinchcliff's thoughts. It drove like a mist before his immediate concerns. Fires that went to and fro! But the preoccupation of his new position, and the impression he was to produce upon Holmwood generally, and the school people in particular, returned upon him with reinvigorating power before he left the station and cleared his mental atmosphere. But it is extraordinary what an inconvenient thing the addition of a soft and rather brightly-golden fruit, not three inches in diameter, may prove to a [Continued on page twelve]

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

IN this issue of the Buick Bulletin we announce the revised prices of the various Buick models for the balance of the nineteen-nineteen season.

The conditions since the close of the war have been utterly without precedent, as far as the motor car industry is concerned—indeed, as far as practically all business men are concerned.

Chaos has reigned in the material market and an undercurrent of uncertainty has affected every move of markets and money—the two great barometers of trade.

There was lacking that feeling of confidence which is so essential to inaugurating definite plans for the future, and for many weeks practically all industry was literally feeling its way and doing everything possible to expedite the change in conditions that was known to be inevitable, sooner or later.

There is an immutable law of business that says that nothing can stand still. It must move either forward or backward. Conditions are either favorable or unfavorable, and to either of these factors all business is extremely sensitive.

The Material Situation

NOW, the key to this business jam was the producer of raw material, and until he was free to pursue his way down the stream of commerce without being blocked by numerous obstructions, the manufacturers depending upon him could not hope to make any real progress.

This condition was analyzed somewhat fully in the November issue of the Buick Bulletin, and in that article the statement was made that until the material situation was cleared up and contracts for future material requirements were let, no motor car manufacturer could revise his prices intelligently.

It was also stated that there was no means of knowing at that time just what the outcome would be—whether the revision would be up or down, or whether the prices of some or all models would remain stationary.

The problem was extremely complex and required a vast amount of labor and investigation to settle it properly. In view of the situation as it stood only sixty days ago it has been settled with remarkable speed. The Buick Motor Company is one of the largest buyers of raw materials in the country and has naturally built up a prestige among the producers of such material. Many of these producers have been supplying the Buick Motor Company with material for nearly

twenty years, and on a constantly increasing scale each season as the demand for Buick cars increased. Therefore, realizing that it was for the good of all concerned to get down to a stable working basis at the earliest possible moment, they have given their fullest co-operation in bringing that result about.

Contracts Secured

THE last few weeks have seen a great clearing up of the material situation, and the producers of raw materials are to be congratulated upon the speed with which they have worked. The Buick Motor Company has been able to secure contracts with responsible sources of supply for its material requirements for the balance of the season and is now in position to make an intelligent revision of prices that will not be changed between now and the end of the season, at least.

This announcement will be received with enthusiasm by dealers and buyers alike, because while Buick prices have remained remarkably stable during the entire war, it was inevitable that they should in some degree have been affected.

Buick prices were not changed at all between the time that America entered the world war and the end of that season. Neither was any deviation made during the following year from the prices established at the beginning of the 1918 season.

When the 1919 season came on, new models had been designed and new production started. But the question of material grew worse and worse as the Government's demands for material became constantly greater, until it was as impossible to establish permanent prices as it was to say how many cars material could be secured for during the months to come.

Prices Revised

NOW the uncertainty has been removed and our course for the remainder of the season has been clearly mapped out. The prices for the different Buick Valve-in-Head models follow:

- Model H-Six-44, \$1495.
- Model H-Six-45, \$1495.
- Model H-Six-46, \$1985.
- Model H-Six-47, \$2195.
- Model H-Six-49, \$1785.
- Model H-Six-50, \$2585.

It will be noted that on four of the models the prices have been reduced, and that on two of them the prices remain as previously established.

This result is really more favorable than we expected when our article in the November Bulletin was written.

The Future

NO great international upheaval of long duration, such as the great war, can take place without leaving some after effects that will be more or less permanent. In this particular case, the material resources of the world have been drawn upon most widely—not merely the materials for the actual munitions of war, but practically everything that is used or consumed by human beings. And at the same time, a considerable portion of the civilized world has been, for the present, rendered incapable of producing its share of these materials, even for home consumption.

When we think of the conditions that exist in other parts of the world, we immediately realize the overwhelming demands that are going to be made upon America in the way of materials, for years to come.

This is the aftermath of the great world war and it is going to be felt in America for a long time, not as an evil, but as a changed condition. The effect that it will have, not merely on the prices of motor cars but of everything else, remains for the future to disclose. It should certainly be a tremendous stimulus to American industry, from top to bottom, but we should hesitate to say that it will increase the buying power of a dollar.

Conditions Stabilized

IN view of the uncertainty of the past few months, it is very gratifying to the Buick Motor Company to be able to announce the present schedule of prices, because it means more than simply the announcement of a new price schedule: it means that conditions have been stabilized.

The purchaser of a Buick car can make his investment, as always, with the utmost confidence that he is getting an excellent motor car value, as well as an excellent motor car. Each of the six cars in the present Buick line is built with the same exactness as the Buick cars of the past have been built, with the addition of some improvements in design that give added convenience and added efficiency, making these cars still more desirable to operate and to own.

Buick cars have always been in a class by themselves, serviceability, performance and economy considered, and their purchase is really an investment in so much transportation to be used at any time and in any manner to suit the needs of the owner. From every standpoint, the six cars in the Buick nineteen-nineteen line are the finest automobiles that have ever borne the Buick nameplate, and in actual dollar-for-dollar value they cannot be duplicated.

BUILDING BUICK REAR AXLES

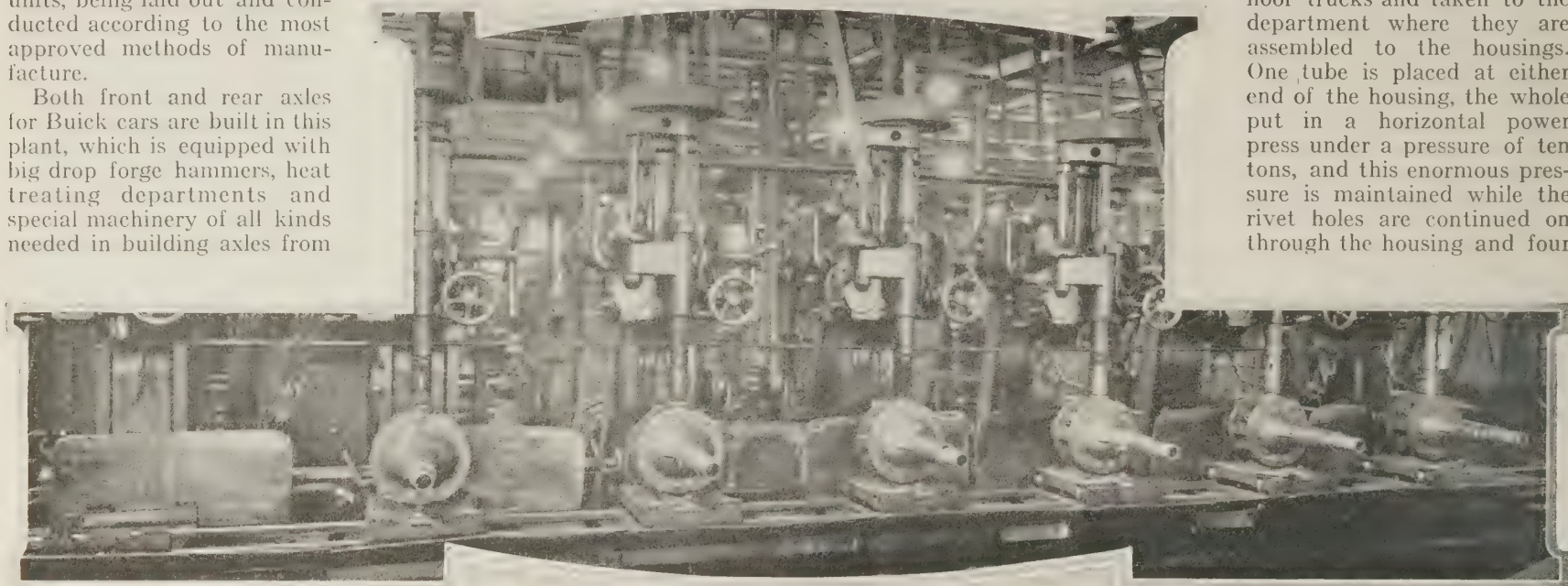
THE enormity of the Buick axle factory can be best expressed by the statement that it is made up of eight modern factory buildings, with a total floor space of 448,200 square feet. Its efficiency as an axle building plant is of the same high standard as the other Buick factory units, being laid out and conducted according to the most approved methods of manufacture.

Both front and rear axles for Buick cars are built in this plant, which is equipped with big drop forge hammers, heat treating departments and special machinery of all kinds needed in building axles from

would not endanger the safety of the occupants of the car. In addition, this construction affords the utmost accessibility to all working parts for adjustment and care.

The pressed steel housing is electrically welded together and comes to the grinding

same time is turned for the rough bearing and thread space. Then the bearing space is finish turned and the end threaded. Two tubes are then placed in a milling machine at once and the keyways cut in. The tubes are then inspected. A load of finished tubes is then placed on one of the electric floor trucks and taken to the department where they are assembled to the housings. One tube is placed at either end of the housing, the whole put in a horizontal power press under a pressure of ten tons, and this enormous pressure is maintained while the rivet holes are continued on through the housing and four



Wherever possible, the machines that work on Buick axles are arranged in 'gangs' to perform one operation after another without removing the parts from the jigs. This illustration shows a gang of seven big drilling machines.

the raw materials. The factory buildings are flanked by railroad tracks, permitting the box cars to be drawn up alongside the covered platforms and unloaded. In this manner, the raw materials and parts for the axles are brought directly from the freight cars to the various stock bins, which are located at intervals on the side of each building next to the railroad tracks, the material thus being ready for each separate department as the axles progress from one operation to the other.

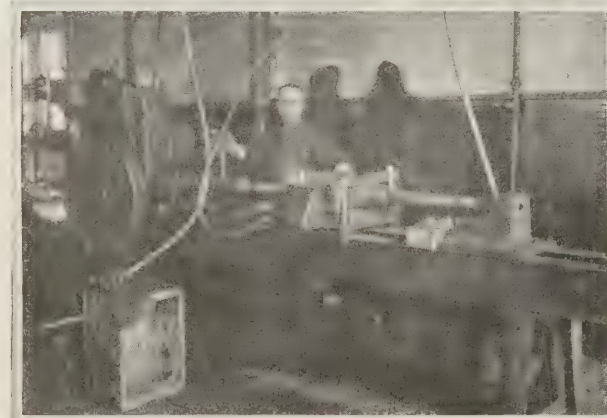
TO get a comprehensive idea of the various operations connected with the manufacture of both front and rear axles, one would have to spend the better part of a day in

department direct from the welding machines. Here it is ground and polished until the exterior is smooth and ready for painting. It is then taken to the straightening bench and trued up, after which it is inspected. The drain hole is next drilled and tapped in one operation, and then the oil shedders are pressed into either end to prevent oil from finding its way through the tubes and onto the brake bands. The shedders are then welded to the housing.

In the meantime the main tubes have been prepared. These tubes resemble a trumpet in form, one being placed on either side of the

stout rivets hammered in place. Removed from the press, the assembly then goes to the riveting department where the twenty remaining rivets are pneumatically hammered in place.

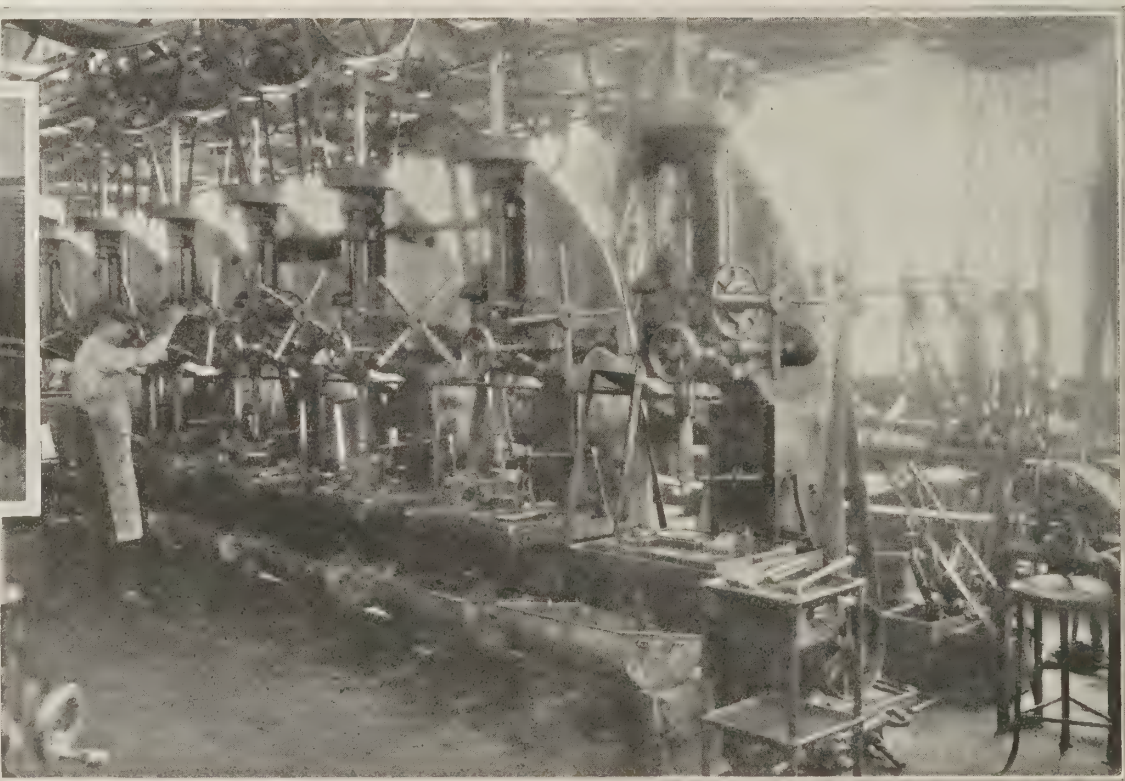
The housing is now placed on a gravity conveyer and rolls to a power press, where the housing is straightened and inspected. The tubes are then calked at the bell ends, to prevent the lubricant from leaking out. The holes for the housing cap are then drilled, also the holes for the bumper brackets, and the housing is ready for inspection.



This horizontal power press puts ten tons of pressure against the axle housing and tubes, holding them firmly together while the first rivets are hammered home.

following the progress of the axles from one operation to the next. So in this article, the rear axle only will be considered, and those operations selected that will give a correct conception of the skill and care that is exercised in every detail of Buick rear axle building.

To begin with, the Buick rear axle is what is known as the full floating type and is remarkable for its strength, smooth operation and double factor of safety. Not only is the steel housing of great strength and reinforced by a truss rod, but in use it supports the weight of the car and leaves the "live" axles free to the work of propelling the car. In this manner, an accident that would completely ruin one or both driving axles

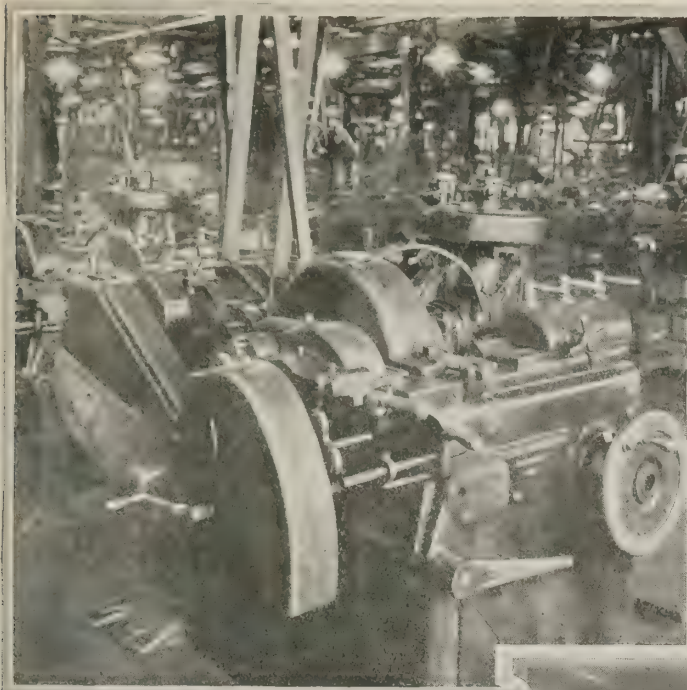


Here is another gang of boring and reaming machines. Note the specially designed cutters that make possible the combination of two or more operations, and the guides that hold the tools in perfect alignment.

housing. The first operation is to bore the rough tubes for the drive shaft. The small end is then faced off and the bell is rounded. Next, the 14 rivet holes are drilled in the tube and the burrs from the drilling removed from the inside of the tube. Then the outside diameter of the tube is turned down accurately to accommodate the spring seat, and at the

In this manner we have a housing that is stronger than a steel casting would be, much lighter in weight and perfectly true in dimensions, to insure correct alignment of the internal mechanism.

The differential carrier that supports the differential in place in the rear axle would be a complicated piece of work if each operation



This powerful machine cuts the splines on Buick axle shafts by means of a very ingenious spiral cutter. After setting, it is not necessary to remove the shaft until finished.

were done separately. After the faces have been milled and the holes all drilled in one operation on a multiple spindle drilling machine, the carrier is put on a jig that moves on a stationary track. The jig holds the carrier in exactly the right position and makes it possible for six machines to operate on the carrier without once being removed from the jig. The first machine does the rough boring, the next the finish boring, the next countersinks hole and the next three cut the threads for the adjusting nuts. After this the carrier is put into an automatic washing machine, containing a boiling solution of washing compound, and is carried through on rollers. It is then carefully inspected, the adjusting nuts put in place and the carrier sent to the assembly department.

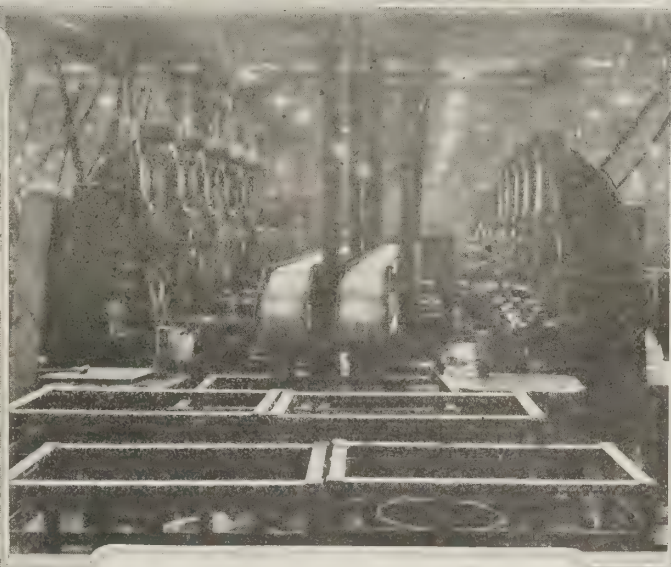
The nickel steel drive shafts are forged in the Buick drop forge plant, heat treated and put through a rolling mill that rolls the taper on the ends of the shafts. They are then brought to the axle plant, turned to the proper dimensions and the splines cut on the inner ends by a specially designed machine with a spiral cutter. An interesting feature of this department is the gravity conveyor that has been developed to carry the shafts from one machine to another until finished. When one workman is through with a shaft, he simply puts it into the conveyor and it is carried along to the next man.

THE assembly of the many parts that go to make up Buick rear axles is accomplished on a track that divides three ways, in order to permit three lines of workmen to operate at the same time. The assembly stands are mounted on wheels and move along the track as the work progresses. Each workman or pair of workmen has certain duties to perform, and when these duties are finished the stand with the partly completed axle is pushed on to the next operation, a few feet away. The axle does not leave the track until it is finished complete. It is then lifted from the stand by a pneumatic jack and placed on a testing machine before being finally inspected. At this point the three tracks merge into one again, and on this one track the string of finished axles proceeds to the shipping room and is consigned to the car assembly plant.

The story of building differentials, bevel gears and driving



A section of the row of gravity conveyers that carry Buick axle shafts from one machine to another until all machining operations are completed.



These endless belt conveyers handle four kinds of parts made on the two rows of machines, keeping them separated by dropping them into separate containers.

pinions is a long one and will not be covered in this issue of the magazine. But for the information of those owners who would like to become more familiar with the mechanism of the rear axle, the following directions for adjusting the rear axle are given:

In order that the spiral bevel ring gear and pinion may operate correctly, the rear axle must be in perfect alignment, i. e., the differential axis must be in the same plane as the pinion axis. If there is any variation at all, the pinion axis must not be above the gear axis, as that would throw the contact or load on the heel of the teeth.

Where single row ball bearings are used in rear axles, they may have a little angular movement, but must not have any radial play. By angular movement is meant a slight rock, an action we get in a ball joint. By radial movement we mean straight up and down. If the

bearings are laid on a surface plate and you can move the cone straight over against the outer race and notice much play that way, the bearings should not be used. Also see that the balls are not damaged.

If bearings of the roller type are used, make sure that neither the rollers nor the cups are pitted.

In mounting the ring gear on the differential, inspect the ring gear seat of differential case to determine whether it runs true with the bearing hubs. If it runs out more than .002", have it faced off in a lathe to make it run true. When riveting the ring gear on case, make certain that it is riveted tight. The ring gear should not run out more than .008", using the bearing hubs of the differentials as centers.

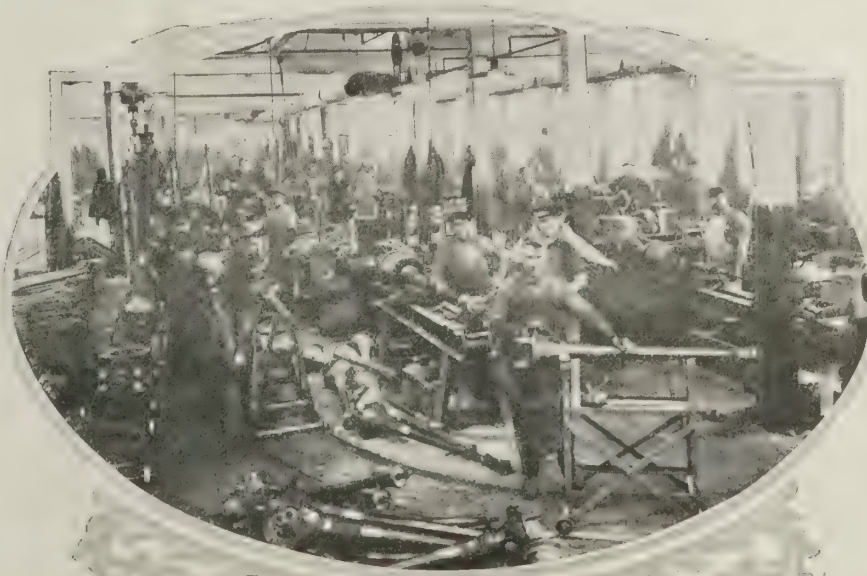
When driving pinion on shaft, see to it that it does not ride the key, also that it is driven on tight. Pinion must not run out more than .004" on shaft.

THE best way to get an adjustment of the pinion and the spiral bevel gears is as follows: Roll the pinion around the ring gear by hand and note the position which the pinion takes at the large or small end, whether it sticks out or runs in. Assemble them in the axle as near as you can in that position, allowing from .005" to .008" backlash between them. Place the axle under the car and at the same time paint the gear teeth with a thin coat of white lead. After this is done, jack up the rear wheels, start the motor and put the transmission into high gear, putting on the brakes. The brakes should be equalized so as to give an even load on both wheels. This will wipe the paint off the teeth and will indicate how the teeth are making contact. The contact should be just a trifle heavier on the toe of the teeth than it is on the heel. (The heel is the large end and the toe the small end.)

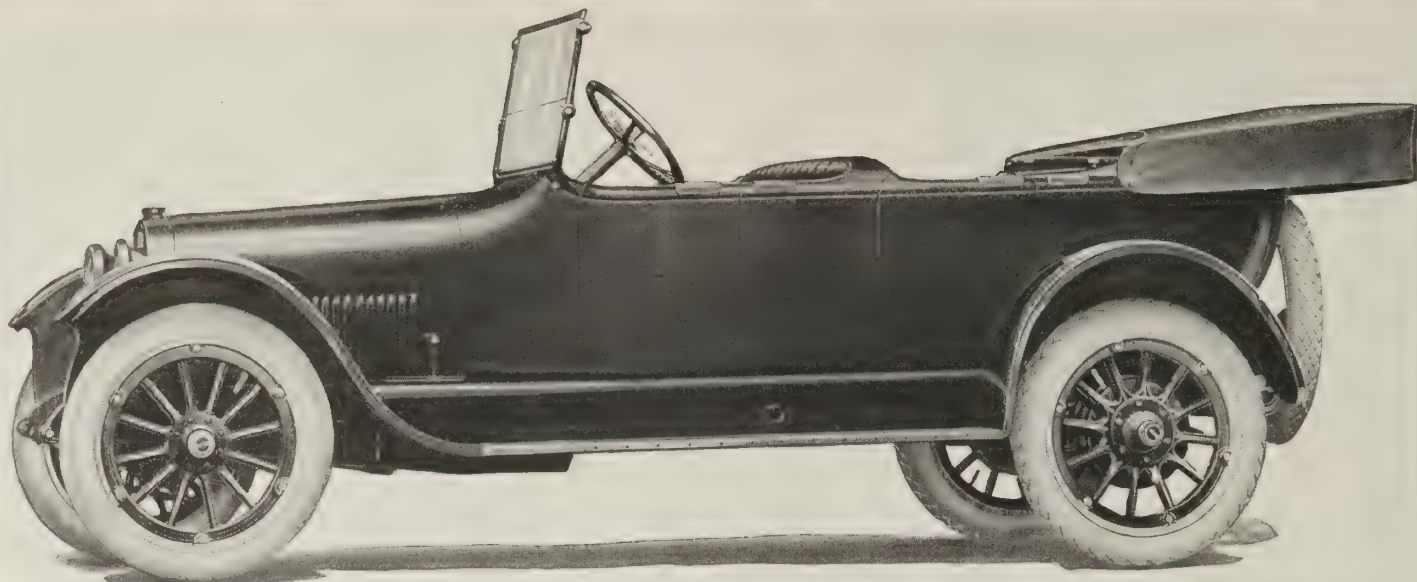
If the load comes on the flank of the teeth, the pinion is too far toward the axle. Pull the pinion out until the contact comes to the full working depth of the gear teeth without leaving the lowest point of contact.

Do not allow too much backlash between the ring gear and pinion. To correct, move the ring gear toward the pinion, but make sure there is backlash.

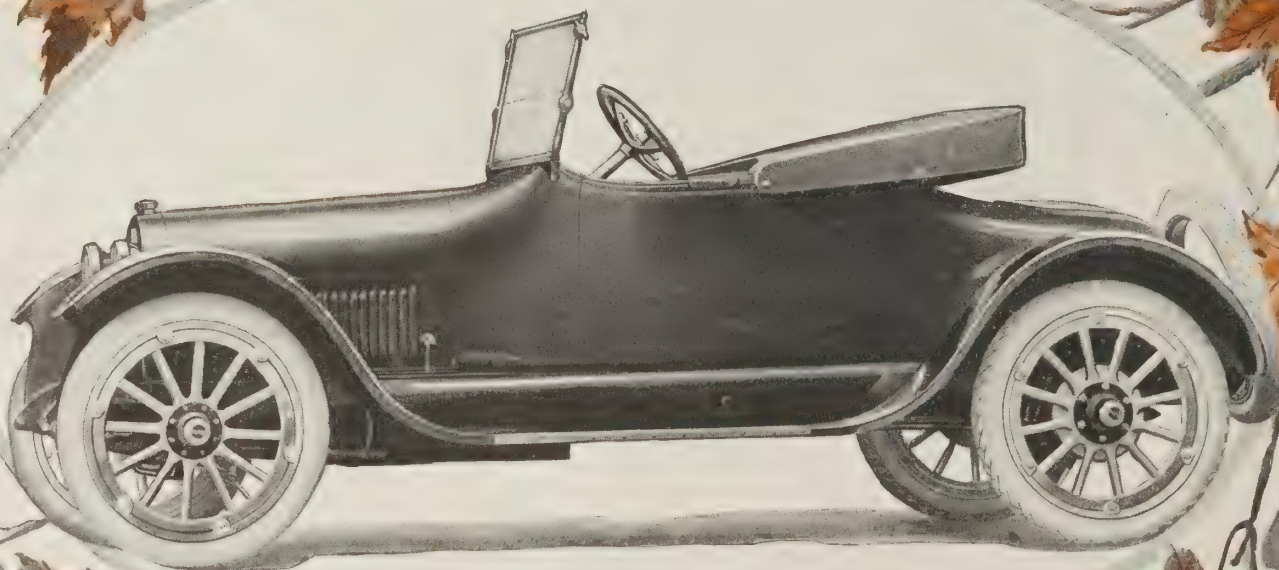
Contact on the toe is not bad, although it should not be centered there too much. Never have a heavy contact on the heel. To correct, move ring gear away from the pinion.



A section of the Buick rear axle assembly department, showing the track system, pneumatic jacks and partly assembled axles.



Seven-Passenger Open Model H-Six-49
Price \$1785



Three-Passenger Open Model H-Six-44
Price \$1495



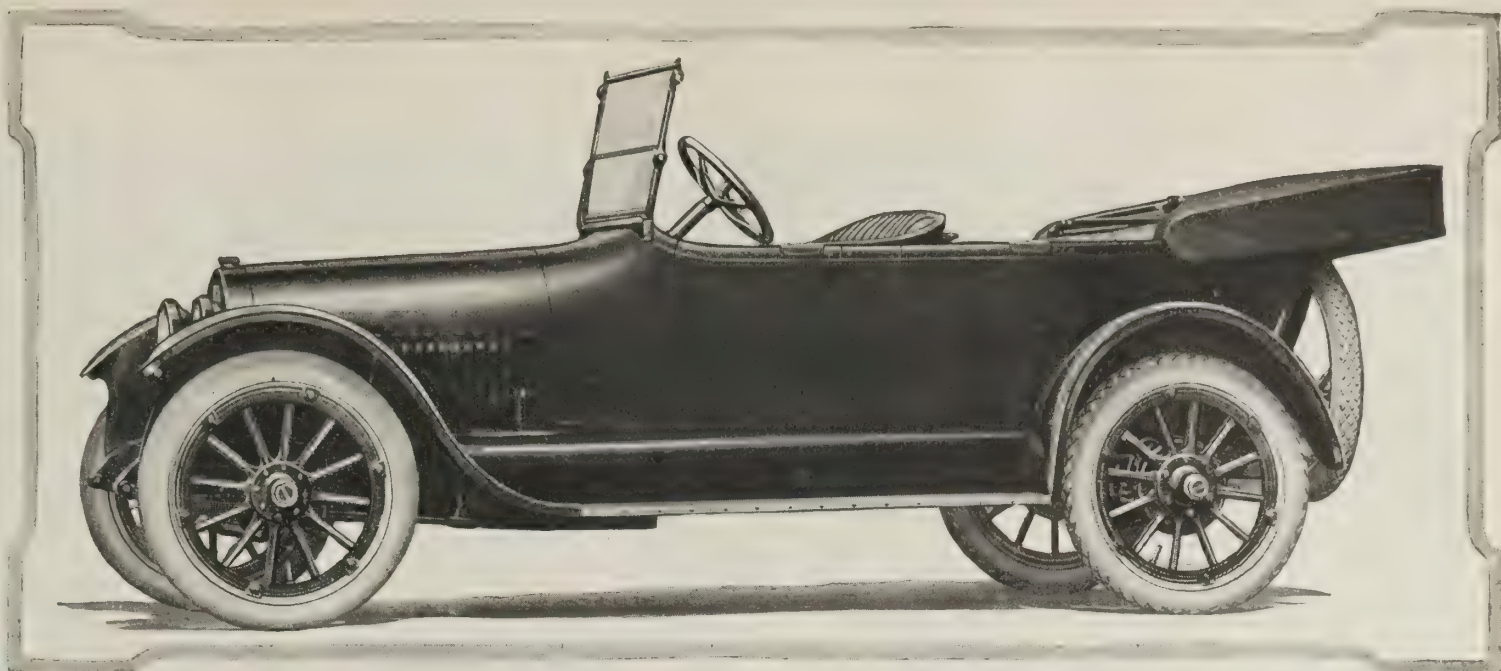
Five-Passenger Closed Model H-Six-47, Price \$2195

THE six models have been an idea of making model parts distinct class

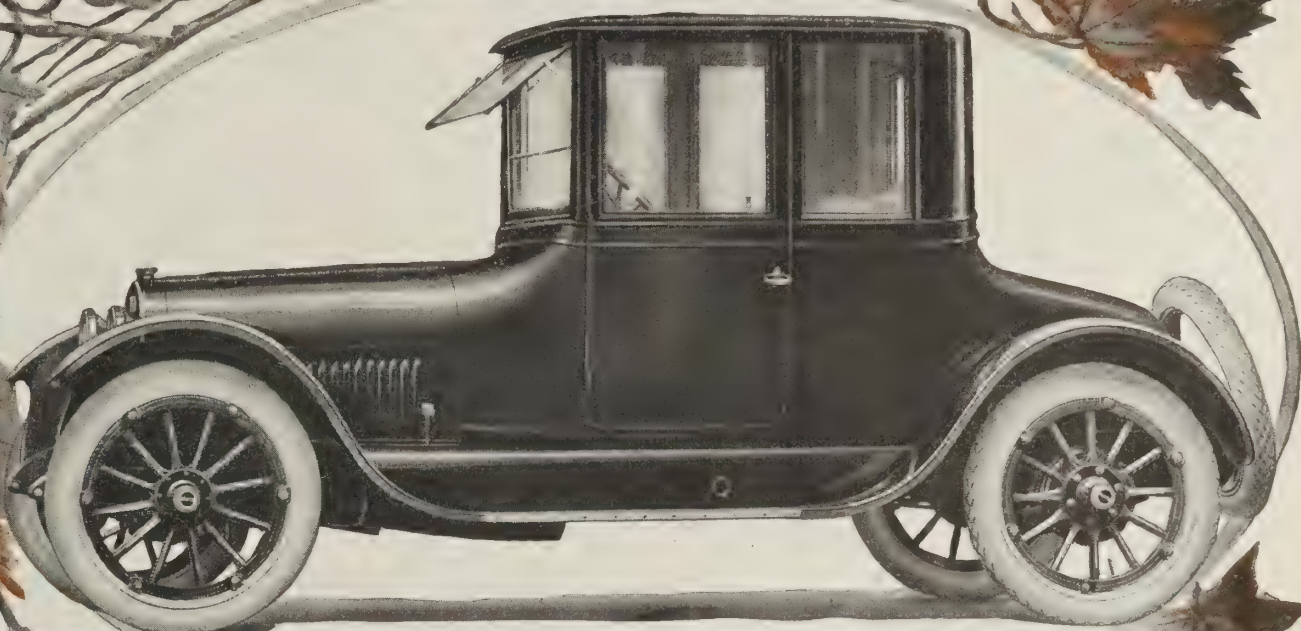
In this manner own standards roughly consist of the own simplified body type capacity.

The mechanical same throughout by the almost twenty been spent Valve-in-Head

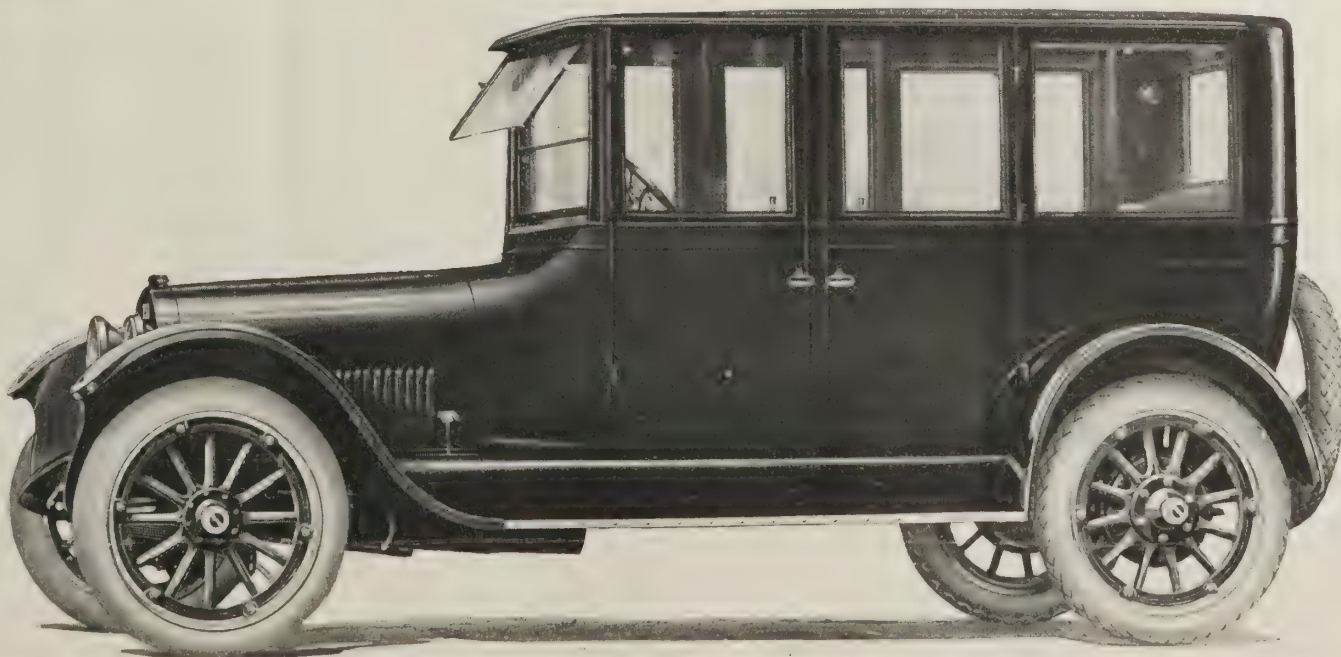
B



*Five-Passenger Open Model H-Six-45
Price \$1495*



*Four-Passenger Closed Model H-Six-46
Price \$1985*



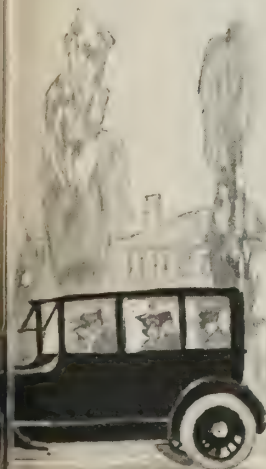
Seven-Passenger Closed Model H-Six-50, Price \$2585

Valve-in-Head
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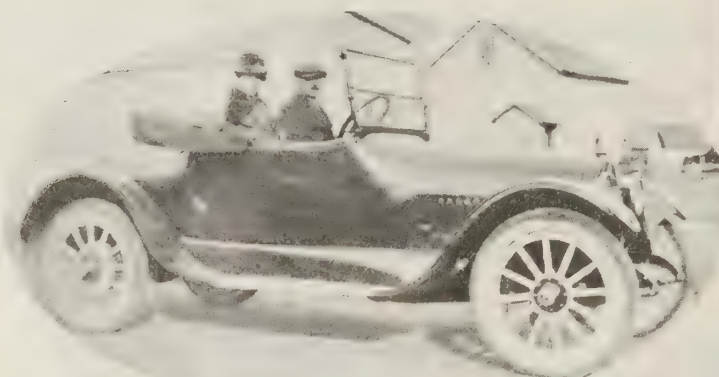
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motors and cars.

Buick





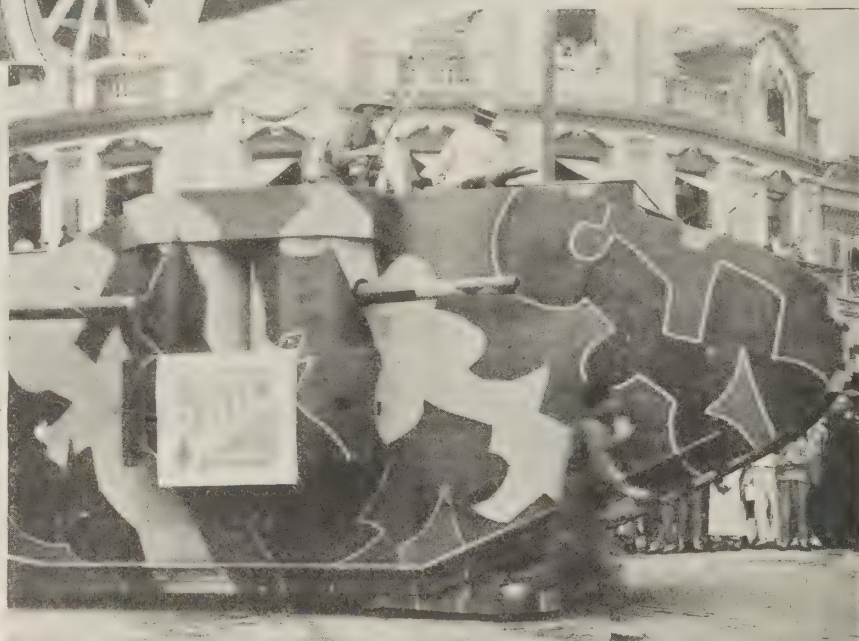
"Any old port in a storm and any old repair in a pinch," seems to be the motto of a prominent Nevada cattleman by the name of Smith. Mr. Smith is an enthusiastic Buick owner and was recently using his Buick car for the purpose of getting horses for a round-up, when he bumped into a corral gate and injured the radiator. It was impossible to have it repaired properly until his return to the city, so he looked around for something to make a temporary repair. A milk can was soon located, the radiator removed, a hole cut in the bottom of the can and a pipe soldered on to connect with the hose from the cylinders. A longer hose was run through a hole in the top of the can and connected with the other hose connection, and the can was then firmly wired in place. Mr. Smith says that he experienced no difficulty from overheating on the return trip, although the car was operated in this manner for several days. While the Buick Motor Company would hardly recommend the general use of milk cans in lieu of radiators, it must certainly compliment Mr. Smith on his ingenuity in meeting emergencies.



Mr. Arthur E. Brenneman, of Carlock, Illinois, is tax collector for White Oak Township, McLean County, Illinois. In speaking recently of his Buick car, he said: "I have driven my Buick Model E-Six-44 5100 miles without a bit of trouble. I consider this car the most essential piece of machinery I own, as it saves me fifty per cent of my time."



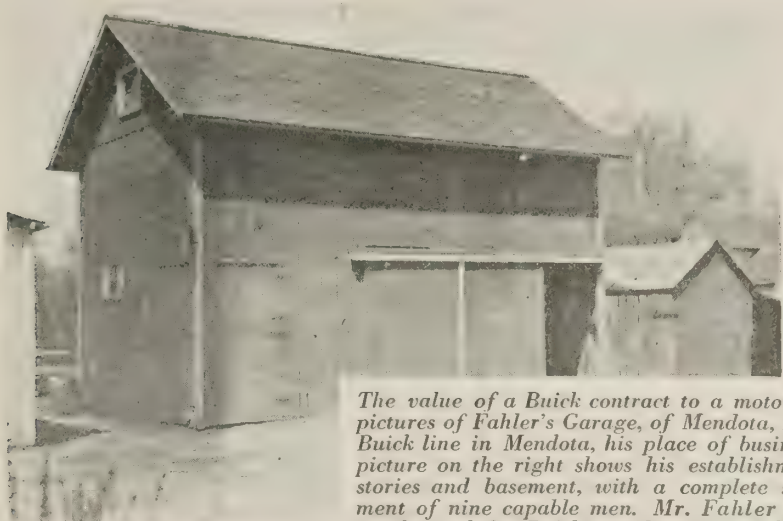
The Twentieth Century Garage is a large and modern establishment in South Bend, Indiana, devoted exclusively to Buick sales and service. Mr. W. H. Nichols is the proprietor and adopted this policy in August, 1910. He says: "Our reason for sticking to Buick only is that we firmly believe we cannot give our customers more value for the money than they get in a Buick automobile."



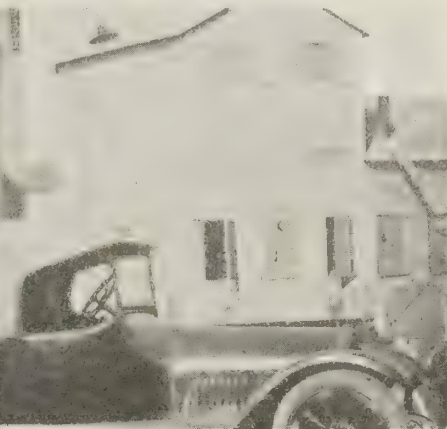
This picture of a camouflaged tank was contributed by Mr. W. P. Viles, of Burlington, Shanghai. The tank appeared in the Red Cross parade in Shanghai and was mounted on a Buick car. The Buick Valve-in-Head motor, on account of its power and ability to give perfect service at low speeds, experienced no difficulty in propelling the heavy load. Mr. Viles adds that the Buick is the leading car in Shanghai.



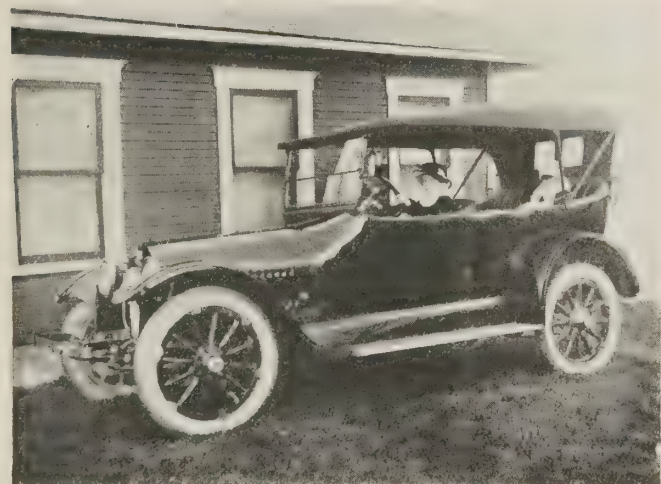
Buick Valve-in-Head motor cars are known the wide world over; and it's a short road that has no Buick service station. Here's the Buick home in Perth, Australia, and a very fine home it is. Messrs. Dalgety and Company are the proprietors, and they are as prompt and polite about rendering Buick service as they are to sell Buick cars; and, as their fine building indicates, they are well equipped to do both.



The value of a Buick contract to a motor car dealer is well illustrated by these two pictures of Fahler's Garage, of Mendota, Illinois. In 1907, Martin Fahler took on the Buick line in Mendota, his place of business being in the building on the left. The picture on the right shows his establishment in 1918—a fireproof structure of two stories and basement, with a complete stock of Buick parts and a service department of nine capable men. Mr. Fahler attributes his success largely to the big demand for Buick cars because of their well-known efficiency and stability.



The former owner of this Buick Roadster fell in love with a later Buick model and bought it. The Roadster was then sold to the Streets and Engineering Department of the city of Springfield (Massachusetts) and hooked up with a three-ton traction unit and bottom dump trailer. It has been in this service two years, hauling 7000 pounds of crushed rock per trip without difficulty. Buick passenger cars are not built with the idea of converting them into heavy duty trucks, but they are built with an unusual amount of stability and reserve power, which is well illustrated by the work this car is able to perform so regularly.



Miss Pauline Rose, of Galena, Ohio, says she would rather be first in the tonneau than second in the driving compartment. So she has left the wheel to her sister, Mildred. Both these young ladies are extremely proud of the family car, a Buick Model E-Six-45, and this pride is shared by the rest of the family. In speaking of the car, their mother, Mrs. James Rose, said: "This car, as it stands, has been driven 3300 miles and is perfectly satisfactory in every detail; not even a tire has been removed from its rim."



The Johnson City Buick Company, of Johnson City, Tennessee, is entering on its sixth year as Buick representative in that territory. The successful business enjoyed by the proprietors during that period has enabled them to build this new garage and salesroom as a monument to a combination that cannot be beaten—a good dealer and a good car.



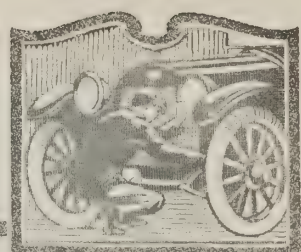
There are not many towns the size of Blandinsville, Illinois, that can boast of a better garage than the West Side Garage, of that place, owned by Mr. M. G. Davis and his son R. L. Davis. This is their third year with the Buick line and their record during that time is a very enviable one; a large factor in their success has been the prompt and efficient service given their customers. They recently built an addition sixty by sixty feet on the South Side of the garage to be used by the service department. They employ four mechanics and carry in stock a complete line of Buick parts.





Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



The Care of Springs

THE extraordinary amount of work that is thrown upon the spring suspension of an automobile is entirely out of proportion to the slight care that is generally given it. The shocks of cobblestones, ruts and "thank-you-ma'ams," multiplied thousands of times by momentum and repeated incessantly throughout every mile of travel, must all be met by the springs, cushioned and transmitted to the car occupants and mechanism in the form of harmless undulations.

The proper care of springs is a very simple matter, and the slight effort involved will be repaid many times by the added comfort derived, to say nothing of the added protection to all the working parts of the car.

When Buick cars leave the factory, the springs are all properly lubricated, and particular attention is given to the springs in manufacture to see that every leaf and shackle and bolt is built to give smooth action and long wear.

Some extra attention should be given to the springs during the breaking in process, just as it is advisable to let the motor wear in carefully until it "finds itself"—say during the first five hundred or one thousand miles.

The weight of the car and passengers upon the springs will soon cause the springs to take what is known as a permanent set—that is, the slight elongation which is natural to steel will take place and the springs will lower a small fraction of an inch. Allowance for this

"set" is of course made in manufacture. As a result of the elongation, the spring clips (see illustration) will naturally loosen a trifle, and for this reason they are fastened in place with hexagon bolts and nuts so they may be tightened.

It is essential to the life of the springs that the spring clips be kept tight at all times, in order that the spring leaves may be held tightly together. The reason for this is that if the leaves are not held firmly in place there is a possibility of one or more of them breaking if an unusually severe bump is encountered. Spring leaves do not break on the descent, but always on the rebound; and it is during this phase of their action that the leaves must hold together in order to divide up the shock. So the clips should be watched frequently during the first few hundred

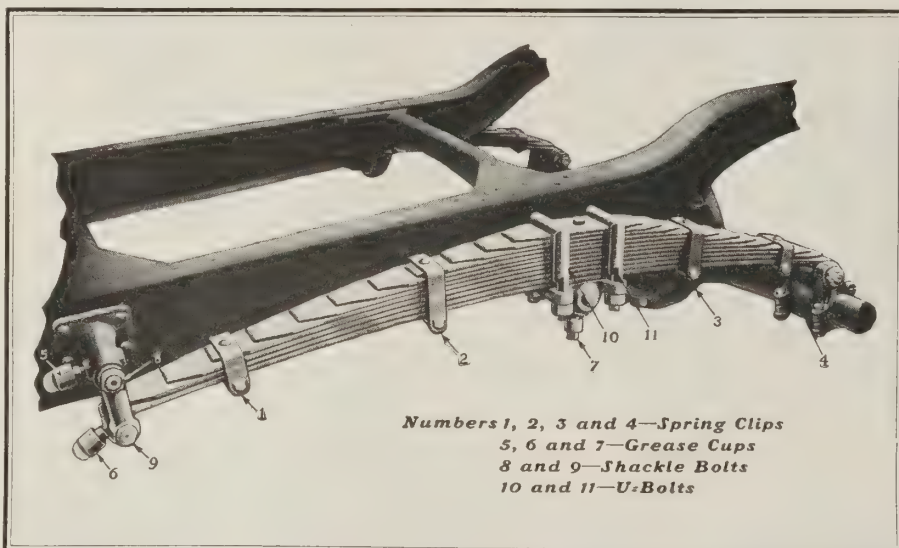
miles, and after that at longer intervals.

Once or twice a season it is advisable to jack the car up in such a manner that all the weight is supported by the jack and the frame. Then loosen the spring clips and spread the leaves apart, and with a thin, flat instrument, such as a hack saw blade, liberally smear the surfaces of the leaves with a mixture of flake graphite and motor oil. This is an excellent spring lubricant and will permit the leaves to slide over each other with very little friction, thus giving the same smoothness of action as when the car was new. The leaves are all lubricated at the factory before assembling, but in time the lubricant will be forced out by the spring action and by water, mud, etc.

The spring shackle bolts are fitted with grease cups (see illustration). These grease cups should always be kept filled and turned down. Remember that the shackles are in an exposed position and that mud and water are constantly being splashed on them while driving or when the car is washed. Like anything else made of steel, they will rust or wear if not kept well greased, but a few minutes every week will suffice to keep them properly lubricated.

Keep the large U-bolts that hold the springs in the center tight. The same general rule applies to them as to the spring clips, particularly during the first few hundred miles of use.

The illustration shows the rear cantilever spring, but the same care should be given to the front springs.



Numbers 1, 2, 3 and 4—Spring Clips
5, 6 and 7—Grease Cups
8 and 9—Shackle Bolts
10 and 11—U-Bolts

THE APPLE

Continued from page four

sensitive youth on his best appearance. In the pocket of his black jacket it bulged dreadfully, spoiled the lines altogether. He passed a little old lady in black, and he felt her eye drop upon the excrescence at once. He was wearing one glove and carrying the other, together with his stick, so that to bear the fruit openly was impossible. In one place, where the road into the town seemed suitably secluded, he took his encumbrance out of his pocket and tried it in his hat. It was just too large, the hat wobbled ludicrously, and just as he was taking it out again, a butcher's boy came driving round the corner.

"Confound it!" said Mr. Hincheliff.

He would have eaten the thing, and attained omniscience there and then, but it would seem so silly to go into the town sucking a juicy fruit—and it certainly felt juicy. If one of the boys should come by, it might do him a serious injury with his discipline so to be seen. And the juice might make his face sticky and get upon his cuffs—or it might be an acid juice as potent as lemon, and take all the color out of his clothes.

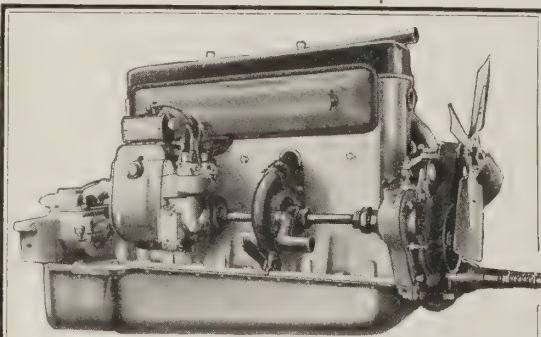
Then round a bend in the lane came two pleasant, sunlit, girlish figures. They were walking slowly toward the town and chattering—at any moment they might look round and see a hot-faced young man behind them carrying a kind of phosphorescent yellow tomato! They would be sure to laugh.

"Hang!" said Mr. Hincheliff, and with a swift jerk sent the encumbrance flying over the stone wall of an orchard that there abutted on the road. As it vanished, he felt a faint twinge of loss that lasted scarcely a moment. He adjusted the stick and glove in his hand,

and walked on, erect and self-conscious, to pass the girls.

But in the darkness of the night Mr. Hincheliff had a dream, and saw the valley, and the flaming swords, and the contorted trees, and knew that it really was the Apple of the Tree of Knowledge that he had thrown regardlessly away. And he woke very unhappy.

In the morning his regret had passed, but afterward it returned and troubled him; never, however, when he was happy or busily occupied. At last, one moonlight night about eleven, when all Holmwood was quiet, his regrets returned with redoubled force, and therewith an impulse to adventure. He slipped out of the house and over the playground wall, went through the silent town to Station Lane, and climbed into the orchard where he had thrown the fruit. But nothing was to be found of it there among the dewy grass and the faint intangible globes of dandelion down.



When Better Valve-in-Head
Motors are Built
Buick Will Build Them

Would Be Handicapped Without Them

THE California Stevedore and Ballast Company, of San Francisco, writes as follows: "We use three Buick motor cars in our business, each making a mileage of from twenty to sixty miles each day, taking in a territory from the Presidio on the north to Hunter's Point on the south, in San Francisco; also between San Francisco and Port Costa.

"It would be impossible for our superintendents and foremen to cover this territory and give proper attention to the various vessels loading and discharging without motor vehicles.

"At times we handle as many as twenty vessels at one time, most of which are along the waterfront of San Francisco, while others are at Oakland, San Pablo, Point Orient, Crockett and Port Costa, so you can readily see what a handicap we would be under were we to trust to rail service to cover this territory."

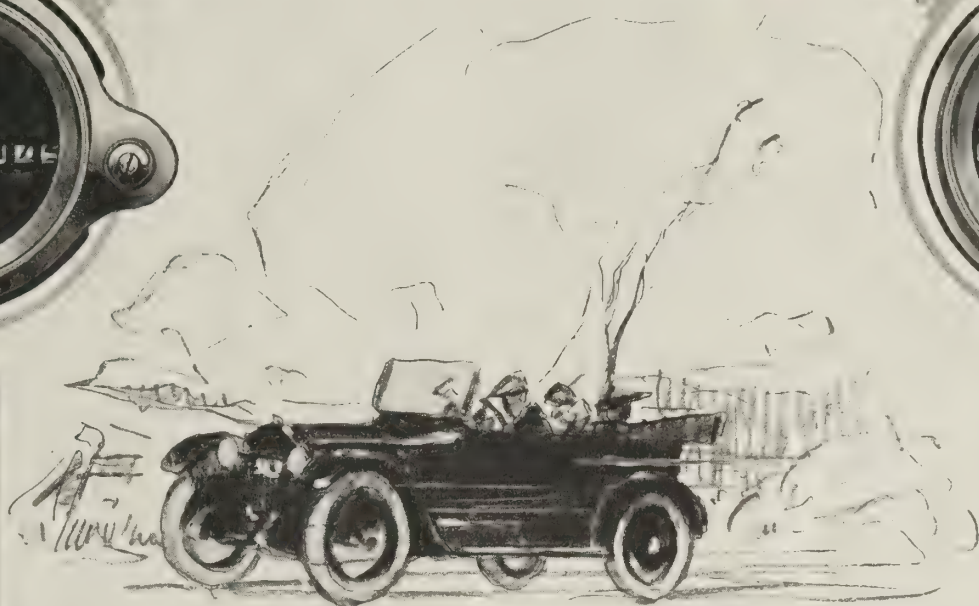
Nine Thousand Miles on First Tires

MR. EDWARD FLUG, of Kenosha, Wisconsin, is a very enthusiastic Buick owner. "I bought a Model D-Six-45 in June, 1917," he writes, "and have since driven it about 9,000 miles, averaging from 18 to 20 miles per gallon of gasoline and am still running on the original tires.

"Driven under all weather conditions and over roads practically impassable for the average car, my Buick has yet to give me a moment's trouble.

"I am always ready to let my sentiments in the matter be known, whether to a prospective owner or in discussing the relative merits of cars, as I am for the Buick first, last and all the time."

WHAT IS THE USABLE SPEED AREA?



THERE is a point, and quite an important point, in connection with the everyday use of a motor car, that motorists generally should take into consideration when buying a motor car. That point is how well the motor car in question is adapted to the individual needs of the purchaser from the standpoint of performance.

To illustrate. A man who uses his car entirely or largely within the limits of a big city must use it within certain well-defined speed limits in order to comply with the ordinances and the driving conditions encountered. In traffic he must throttle down to five or seven miles an hour, drive from ten to fifteen miles an hour through the business district and from fifteen to twenty miles an hour in the outlying districts. To give him good service, his motor car must perform economically and efficiently within those speed limits, and have sufficient reserve power to accelerate smoothly and quickly at low speeds.

On the other hand, a farmer or any other owner whose driving is done mostly in the country encounters entirely different conditions, as the major part of his driving is done

driving must perform well at all speeds from five to sixty miles per hour.

This presents a problem for the designing engineers that is extremely difficult of solution. It is purely a question of motor design and manufacture.

Power and flexibility in the motor give the desired result, particularly if power and flexibility can be combined with economical operation. This combination in the Buick Valve-in-Head motor is an accomplished fact, and is responsible for the performance that puts Buick cars in a class by themselves from a mechanical standpoint.

In discussing internal combustion motors, it is first necessary to get one fact firmly fixed in mind, namely—that they are all heat engines. In other words, they derive their power by converting the fuel used in operating them into heat, and it is the expansion of the heated

gases resulting from each explosion in the cylinders that supplies the impulses necessary to run the motors.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be.

In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder

walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water jacketed space there is in a motor, the greater the thermal (heat) efficiency will be, because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases, both inlet and exhaust valves form a part of the combustion

chamber, where the heat is greatest, and in consequence it is necessary to water jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves

are located. This pocket is water jacketed.

In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water jacketed, it follows that the Valve-in-Head type affords the minimum of water jacketed space that is possible to be secured for any given size of cylinder.

Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the large valves in the Buick Valve-in-Head motor are located in a straight



at speeds in excess of twenty miles an hour. In some states the speed in the country is confined by law to twenty-five miles an hour, with an allowance of five miles an hour for variation in speedometers, thus giving a maximum of thirty miles an hour. In other states the law is less specific, merely stating that drivers must drive with "due caution," so that the matter is left entirely to the driver's judgment and a smooth stretch of road with no obstructions may cause him to speed up to fifty or sixty miles an hour, if his car will go that fast.

These two cases represent the extremes, but they are sufficient to illustrate the point that a motor car for miscellaneous city and country



line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is much more perfect in the Buick motor because the incoming charges are purer.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other types of motors, a quicker ignition of the charge and a smaller loss of heat through the water jackets. The sum of these advantages is more power with less gasoline consumption.

TOURS BY BUICK OWNERS



Makes Long Southern Trip

MR. J. C. BRYANT, of Shawnee, Oklahoma, wrote the following letter under date of October 10, 1918: "I am writing to let you know how much I appreciate the Buick car. I have a little Four and it has been out three years and has not been cared for at all.

"I started from Shawnee the last day of June and drove it over five thousand miles. The repairs on the car were forty-five cents.

"The route I took was to Oklahoma City, then through Norman, Sulphur, Denison, Fort Worth, Dallas, Texarkana, Shreveport, Athens, Pine Bluff, Little Rock and through Dow, the Iron Mountain, to Gerdon and back through the mountain. We traveled all day and by night we were only 35 miles from where we started, yet we traveled almost 300 miles. We came through Center Point, Horatio, Idabel, Fort Townsend, Ada, Purcell and then back to Shawnee, after which we went to Wichita, Kansas, by way of Oklahoma City and Guthrie.

"We saw many other cars of different makes on the roadside, but saw only one Buick. I wanted to know what could be the trouble, so stopped and the driver informed me that his batteries had run down and he had lost his crank. So you see it was no fault of the car, and I will say to anyone buying a car, that they will make no mistake in buying a Buick."

From Mansfield to Tampa

THE following letter from Mr. Harter Tobias was written from Florida, whither he has driven in his Buick Model E-Six-50, starting from Mansfield, Ohio, early in December:

"When we left Mansfield the sun was shining, as it has every day since we left. In Ohio, Kentucky and Tennessee we found the roads fine and everything was easy sailing, but when we reached Alabama the roads were poor. In Alabama, Georgia and Florida the roads have been almost impassable.

"In Alabama and Georgia the roads were mud axle deep and in Florida nothing but sand axle deep. There is only one track and you must follow the track or stop for good. At one place in Alabama I took a picture where there were three cars stuck at one time, but the Buick made them all look sick. At a bad place in Georgia there was a fellow stationed with a mule team pulling out machines. Several were stuck when we went through. He stopped us and said we could never make it,

but you should have heard those 'six' hit them off. He told us there were 150 machines stuck in that place in 15 days, and the only reason we got through was because we had a Buick.

"We traveled through orange and grape fruit groves today and it was certainly a wonderful sight. We are on good roads now and expect to make Tampa tomorrow.

"P. S. My Buick has never given me any trouble."

Tennessee to Ohio and Return

"I HAVE been intending for a long time," writes Mr. E. E. French, of Nashville, Tennessee, "to write you about the qualities *par excellence* of my Buick Light Four, and give you what to my mind, is one of the strongest talking points of the Buick and one which you do not stress as much as you could—and that is the small consumption of gasoline.

"In 1917 I drove from Nashville, Tennessee, to Fayette, Ohio, via Louisville, Indianapolis, Fort Wayne, Bryan and back via Wauseon, Lima, Dayton, Cincinnati, Georgetown, Louisville and Nashville—a distance of 1106 miles—and used only 38 gallons of gasoline, or an average of 29 1/9 miles per gallon. Going up I made 553 miles on 18 gallons, or an average of 30.6 miles per gallon. Two months ago I made two trips to Lebanon, Tennessee, from Nashville. The first trip totaled 63 miles and I used 2 gallons of gasoline—the second trip totaled 62 miles and the car consumed 2 gallons of gasoline. Total number of miles, 125, total



amount of gasoline, 4 gallons, average per gallon 31 1/4 miles. I had four people besides myself in the car on these trips.

"Now, there may be other cars that can beat this record, but I haven't heard of them.

"I bought my car January 10, 1917, and have been to no expense except for tires and am still using one of the original tires—total mileage to date, 7700. The Buick is the car for dependability and economy.

"P. S.—Have witnesses to these records."

A Winter Tour of 7000 Miles

MR. J. H. CATHER, proprietor of the M C C Ranch, Kremmling, Colorado, writes under date of September 4th: "The car I purchased from you last November, Model E-Six-45, has given perfect satisfaction. I made a tour of 7,000 miles. I never was stuck or had a break-down and haven't spent a dollar for repairs outside of one set of new brake linings.

"We left Colorado in November and drove into Wisconsin, got caught in a snow storm and drove 400 miles in snow. Then we struck mud as we went south. We spent the winter in southwestern Missouri and the Ozark mountains. In the spring we returned to Colorado and have used it in the Rocky Mountains to the extent of 2,000 miles. To all appearances, it runs as good as the day I got it.

"Sunday, September 1, I left Colorado Springs at 2:30 p. m. and drove to Breckenridge, crossing the Continental, a distance of about 106 miles, reaching Breckenridge at 7:45 p. m. I never stopped the car and never shifted to low gear. I am getting good mileage, both on the gas and the tires. My car has never given me a minute's trouble and when I buy another one, I want one just like it."



Not so many years ago, when a ploughshare or other piece of farming machinery was broken, it meant a long delay while a slow trip was made to town for repairs. Today the farmer puts the part in his car, speeds to the blacksmith's and is back in no time, ready for business.

This is one of a hundred reasons why modern farming is next to impossible without a motor car. And because the farmer must have a car that is highly serviceable, Buick cars have gained a prestige among farmers that is growing rapidly.



Buick cars are comfortable—convenient—economical—good to look at. But to the man who demands performance under all conditions, their biggest and best feature is the fine Buick mechanism, including the powerful Buick Valve-in-Head motor.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities—Dealers Everywhere



Revised Prices

The assurance of material for quantity production of Buick cars enables the Buick Motor Company to establish the following prices on the various Buick models, effective January first, 1919. These prices will not be changed during our present dealers' selling agreements.

Three Passenger Open Model H-Six-44	. .	\$1495
Five Passenger Open Model H-Six-45	. . .	1495
Four Passenger Closed Model H-Six-46	. .	1985
Five Passenger Closed Model H-Six-47	. . .	2195
Seven Passenger Open Model H-Six-49	. .	1785
Seven Passenger Closed Model H-Six-50	. . .	2585

f. o. b. factory

Buick Motor Company, Flint, Michigan

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities . . . Dealers Everywhere

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MAY 4 1919

THE *Buick* BULLETIN

Published by the Sales Department
of the Buick Motor Company

FEBRUARY 1919

FIVE CENTS A COPY



In this issue—The Used Car Problem—Page Five



The Song of the Marchers

We're marching on with Freemen now,
Across the plains of France.
Upon our blended Banners
See the Sun of Freedom glance;
And we of many races now,
All carry but one lance—
As we go marching on.

We're joining up with Freemen in
The ever winning fight,
For endless days of Freedom
That are now at last in sight,
And in this Holy Conflict we
Are doubly armed with Right—
As we go marching on.

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Flint, Michigan, U. S. A.

Number Two

LOOK PLEASANT, PLEASE!

IS THAT all?" asked the photographers' supply man.

"Is that all?" said Sam Grosbeck sarcastically. "Honestly, since I opened up here, I haven't done enough business to keep a chicken alive. I come here to Riverbank—open up a swell little ground-floor gallery, and I advertise, and I might as well be running a morgue. How much business do you think I've done this week? Three school girls, one grandma, and one group of funeral flowers."

"Oh, things will pick up," said the salesman hopefully.

"Not in this town of Riverbank," said Sam Grosbeck. "The trouble is that it is not a human town. I'm going to go to some town where there's a little bit of vanity, anyway. You take that twenty by thirty camera, for instance. I thought that would make a hit. I've been here six months, and if I didn't take a show-case photograph of my girl, Myrt Margus, once in a while, I'd forget how to use that big camera."

The salesman walked over to one of the show-case photographs and studied it.

"Good work!" he said appreciatively. "Nice looker, Sam. Going to marry her soon?"

"Yes, in a thousand years. Why—" he stopped and gazed through his show-window, where a man was looking at the photographs on exhibition.

"Now, there's an example. That's a man by the name of Rotherhite, and he's a big man in town. He's chairman of the Bessemer Library Board. Wouldn't that bunch of white hair and white whiskers make a lovely twenty by thirty sepia, full-face. I don't believe you could drag that old Rotherhite into this studio with a double team of—"

Mr. William J. Rotherhite moved away from the show-window and let his hand trifle with the latch of the door. He stepped into the studio.

"Broof! Broof!" he said, clearing his throat. "My name is William J. Rotherhite—Chair-

By ELLIS PARKER BUTLER

Illustrated by A. W. Grann

man of the Library Board. I want you to make a picture of me; one of those big ones. I want you to do me justice. Many have admired my beard, and my hair."

hite, there's a comb and brush behind that screen."

Mr. Rotherhite broof-broofed a couple of times and went behind the screen. As he stepped out of sight the door opened and a tall, thin man, with a black mustache and short, glossy brown hair entered the studio.

"Good morning," he said to Sam. "I want you to make my photograph. This size," he added, pointing to one of the show-case photographs of Miss Margus. "I understand the price will be sixteen dollars and a half, according to Miss Margus. I will be in at three."

Sam Grosbeck made a sign of fainting when Mr. Rentz had disappeared. The sounds made by Mr. Rotherhite wrestling with the comb and brush still came from behind the screen.

"That man was Rentz, and he's the closest fisted man in Riverbank," whispered Sam to the salesman. "Now, what do you think of that? He's on that Library Board, too. My girl—this Miss Margus I was telling you about—is the librarian up there, and I don't know what she's done to hypnotize these men, but she's done something. Why—"

Sam never finished the sentence, for another well-known citizen, Mr. C. P. Grilling, entered the studio. Sam promised to photograph him an hour later.

"That's more of Myrt's work," said Mr. Rotherhite. "He's another Library Board man."

"You ought to marry that girl," said the supply salesman. "She's the kind you ought to keep in the family."

"That's my idea, too," said Sam. She's been up to some trick to get the Board to come down here and be photographed. Myrt's all right! Goodbye! If I need anything, I'll write in."

Sam was right about the Library Board. Before the forenoon was over all of them



"How d'do Sam," she said. "Did any of my assorted bosses drop in to see you today?"

"I was just telling my friend here that your head would make the finest full-face twenty by thirty sepia a man ever saw, Mr. Rotherhite. Now, I can give you one of those twenty by thirty, framed and glazed, for twenty dollars—"

"Miss Margus said sixteen-fifty!" said Mr. Rotherhite. "She said my face would be an advertisement for you, and you'd do it for sixteen-fifty."

"Well, if Myrt said sixteen-fifty, I guess I'll have to make an exception in your case," said Sam quickly. "Now, if you wish, Mr. Rother-

dropped in to make appointments or have their photographs made while they waited, but along in the afternoon, the Mayor and Councilman Higgins appeared. They, too, wanted photographs—twenty by thirty size—framed and glazed. It was the best day's business Sam had done since he came to Riverbank. He was well pleased and locked the door and went to walk home with Myrt Margus.

"How d'do, Sam," she said in greeting. "Did any of my assorted bosses drop in to see you today?"

"Did they?" said Sam enthusiastically. "How did you ever work the old codgers?"

"Work them?" said Myrt, innocently. "I didn't work them. I told them they could not imagine how desolate the bare walls were to one that had to gaze at them all day. I told Mr. Rotherhite that a man who had been chairman of the Board for fifteen years, and who had done so much for the Library, should have his photo where all posterity could see his noble, efficient face."

"What did he say to that, Myrt?"

"He said—'Broof—broof!' and then I told him you would make one of your big sepia prints, if I asked you, for sixteen dollars and a half, and that the other members of the board would insist on being hung on the walls if he was—the vain things! He agreed to have one taken at once, and he called a meeting of the Board by telephone, to give me permission to hang their photographs on the walls. Theirs, and those of some other citizens."

"Some other citizens? How did you work that, Myrt?" asked Sam, laughing gleefully.

"I just suggested that with the six members of the Board hung between the windows there would still be bare spaces, and they gave me permission to ask the Mayor and the Councilmen and some others."

"Well," said Sam, "you don't want to get into trouble. If you asked the Councilmen, you'll have to ask old Roger Frodelius, who gave the old library. And then—"

"I know," said Myrt, "I've made a little list."

The new library building was the gift of Bessemer, the great retired steel man, and it was a handsome building. The interior walls certainly had a bare look, and a few pictures would greatly improve them, but the next day, when Myrt Margus looked over her list of prominent citizens, she was doubtful of its tactfulness. When the new building had been completed poor old Sue Bilkins, who had been librarian for years, looked out of place in it, and Myrt Margus had been imported as librarian. Sam Grosbeck, inhabiting the same boarding house, had promptly fallen in love with her.

In her perplexity regarding her list Myrt called in Miss Bilkins, who bore no ill will. She had accepted her release from the librarianship as something she had long expected, and had set up as a public stenographer. She looked over Myrt's list, and shook her head.

"If you ask the Mayor as Mayor, you'll have to ask Mr. York as his competitor in the brick business, or

there'll be trouble," she said. "Shall I take the list and fix it up for you?"

"Oh, please do!" said Myrt. "It will mean so much to Sam. Even at sixteen dollars and a half he makes seven dollars and a half on the photographs. I know he would pay for sending the letters to the men."

"Suppose I arrange a letter and let you see it?" said Sue.

So it was agreed, and Myrt read the letter and approved of it, glad to be relieved of the matter.

Miss Bilkins was a tall, bony woman with an eagle-beak nose. Ordinarily, she was inclined

to be grim, but as she sat at her typewriter with Myrt Margus' list before her, she smiled. After due thought she added the member of the State Assembly from the Riverbank district. That suggested the Judge of the Circuit Court, and his name suggested Judge Ransome and Judge Mills. Because Dr. McClimp was a member of the Library Board, she added the other physicians of Riverbank. By this time she was warmed to the job, and she added the two high school professors and the members of the School Board.

The next morning, as Miss Bilkins walked to her little office she stopped in at Sam Grosbeck's gallery and told him what she had done. He said he would pay for the letters.

"And I tell you right now," he said, "it's like throwing money away. It was all right for those members of the Library Board to come in—it's their library; but these other fellows don't care a rap for the library, and they ain't vain. That's the point—they have no vanity at all."

"That's true, Mr. Grosbeck," said Miss Bilkins, "but one out of the lot might have a tinge of vanity."

"That's just the point I'm making," said Sam. "One out of the lot! But that one is worth seven dollars and fifty cents profit to me if he does come. You go ahead and send out letters 'til I tell you to stop."

Miss Bilkins went to her office and looked over her list. She added the President of the First National Bank, and then, the presidents of the other banks. Also the vice-presidents, and the boards of directors, and as they were all prominent business men, she put down the really prominent business men of Main Street, and wrote letters to them.

The next morning she began to be really interested in list making and she added the really prominent merchants on the side streets.

just now. I've got to run these men off just as fast as I can. A lot of them are kicking now, because I won't deliver their photos until May first."

"A lot of them?" said Miss Bilkins inquiringly. "Are you getting more than one in twenty?"

"One in twenty?" said Sam. "Why, I'm getting twenty in twenty."

"But—but, Mr. Grosbeck," said Miss Bilkins in alarm, "there will not be room in the library to hang a tenth of them!"

"Well, I ain't the hanging committee, am I?" asked Sam. "Myrt has to hang them."

"But how can she? There will be a terrible scandal. What will Miss Margus do? I'm glad I'm not in her place."

"If I was you I'd get ready to get into it," said Sam. "If one of those men gets cross about not being hung alongside the front door and if he happened to be prominent, Myrt might lose her job."

On the first of May, at the first break of daylight, John Gutman, dressed as on Sunday, with a high hat, glass-headed cane, and a huge bouquet of flowers pinned on his coat, waited on the library step. He had brought his own ladder. He knew just where he wanted his portrait to hang, and he meant to hang it there at once. When the janitor opened the doors, he went in and hung his picture on the left of the main entrance. Mr. Bessemer's, the steel king, occupied the panel to the right of the entrance.

When Myrt Margus entered the library John Gutman was sitting at one end of the reading desks admiring his portrait. John was harmless enough, except when angered, but he was not quite mentally sound and people tried not to anger him. His business card said he was "Champion Wood-Sawist and Carrier-Up, Fences Whitewashed also, of Riverbank."

"How nice it looks," said Myrt nervously. "But don't you think your picture would look better here, nearer my desk?"

"No," said John. "That's where it ought to be. I'm the most prominent citizen, ain't I? I'm champion wood-sawer. If anybody takes it down, I'll put it back."

"But Mr. Rotherhite wants that place, John," said Myrt sweetly.

"He's not a champion of anything," said John.

That first quarrel was lost in the general quarrel the day brought forth. Mr. Rotherhite, intent on securing that place of honor, came early. When he saw John Gutman hanging there, so much of his face as appeared above his white whiskers turned purple.

"What's this?" he shouted. "Did you let him hang that—that monstrosity there? Take it down! I won't have it!"

"I'm afraid he won't let me take it down, Mr. Rotherhite," said Miss Margus.

"Won't let you? Broof-broof! What's that got to do with it? I tell you to take it down! I don't want that idiot's picture here at all. You have it down!"

"Mr. Rotherhite," said Miss Margus coldly, "I allow no man to speak to me in that manner! I'll not work under any man that speaks to me so. I resign. I positively resign!"

"But, my dear young lady!" blustered Mr. Rotherhite.

"That will do, if you please!" said Miss Margus, putting on her hat with a great show of anger. She swept past the astonished Rotherhite and out of the door, leaving him to fight it out with John Gutman himself. He was still glaring at John Gutman when Abe Abrahamowsky, the prominent junk dealer, entered with a framed and glazed twenty by thirty under his arm. He was followed by the coachman of Roger Frodelius, bearing a large sepia. Mr. Councilman Higgins and Mr. Grocer Rentz arrived together [Continued on page 12]



At the first break of daylight John Gutman waited on the library step. He had brought his own ladder.

In the next few days she added the rest of the merchants. The next week she had a brilliant idea and wrote to all those on the tax list paying taxes on \$10,000 or over, and the week after she wrote to those paying taxes on less than \$10,000. The week after that she said, "Oh, pshaw!" and began with the list of voters, including every male citizen over twenty-one. Then she went in to see Sam Grosbeck and suggested that some of Riverbank's women were really more prominent than some of the men, but Sam shook his head.

"No, ma'am!" he said positively. "No women! I haven't time to fool with women

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

THERE is an unusually large business done throughout the country in used Buick cars, due to the fact that Buick design and manufacture have become standardized through years of close adherence to the same basic principles. There is another element that enters quite prominently into the situation, too, and that is the fact that most Buick dealers have given considerable thought to the marketing of used Buicks along what we consider sensible and very practical lines.

Almost any used article retains a certain percentage of its original value, and the percentage is high or low according to the quality of the material and workmanship in the article, the usage to which it has been subjected and the amount of service of which it is still capable. In other words, the money value is directly in proportion to how nearly the article approximates its condition when new.

The purchase of a used article is in most cases given as much thought as the purchase of a new one. This is especially true of motor cars in the medium price class, because the purchaser's object in buying such a car is that it will fill his motoring requirements more fully than a cheap car could do and for about the same cash outlay.

THIS is really the hub about which the used car market revolves, and as the number of Buick cars in use continues to multiply rapidly, the importance of the re-sale situation grows, both to buyers and dealers.

Years ago it was the general (though not universal) practice to sell used cars "as is"—a term that meant nothing at all to the buyer. It was very similar to the "sight unseen" practice of small boys in trading pocket knives or marbles, and meant that the buyer might get a good value or he might get "stung." Certainly it called for a good deal of confidence on the part of the buyer in his luck or in his knowledge of motor cars.

But intelligent buyers and the more intelligent dealers have learned that this method lacked the essentials of good business principles.

In the first place, buyers have learned that the best place to buy a used Buick car is from the Buick dealer, because they know that in the very nature of things the Buick dealer is interested in the serviceability of every Buick car in his territory.

Buick dealers, on the other hand, have learned that the handling of used Buick cars is a sort of business within

a business. For it is one thing to *sell* used cars and another to *handle* them.

The conditions are simple enough. Most Buick used cars come to the dealer in part payment for Buick cars of the latest model, and after one or more seasons of use. New cars are not bought on the spur of the moment, and the owners of these cars have usually been figuring on making the exchange for some months before it actually takes place. For this reason, they frequently neglect these cars at such a time to a much greater extent than they would ordinarily do.

WE DO not mean by this that they deliberately abuse them, because that is not the case. But they grow somewhat neglectful of the details of appearance and do not have small matters taken care of because they do not wish to involve the expense.

So the practice of up-to-date Buick dealers, when they take such cars in exchange, is to have them carefully inspected from radiator to rear axle, turn them into the shop and have them carefully overhauled. They are also re-painted if necessary, the tops re-covered and other details of appearance attended to. When the work is done the cars are subjected to a final inspection, after which they are turned over to the used car department for sale.

At the time the cars are taken in, they are appraised by an expert and the owner is advised of the fair exchange value of the car, which is then agreed upon. In determining the selling price of the used car, after overhauling, the cost of overhauling (taken from the actual cost records) is added to the amount of the appraised value, which gives a sound basis on which to work.

The used car department of such a dealer's establishment is kept entirely separate from the new car salesroom, for several reasons. To begin with, the man who is in the market for a used car is not particularly interested in the new models, and vice versa. In the next place, it is impossible to do justice to both new cars and used cars when they are mixed in together on the same floor.

A ROOM full of new cars and used cars has no character whatever—it is neither the one thing nor the other. And a showroom should have as much character as a room in a private home. We have several notable instances in mind, where the used car departments are handled unusually well, and the casual observer would have to look twice to convince himself

that he was not in a new car salesroom. The paint jobs are excellent—sheet metal parts are re-enameled where necessary. The cars are also put in excellent shape mechanically and they run with both power and smoothness.

It is true of used cars, as it is of new ones, that first impressions often have much to do with the buyer's selection. Nobody wants to buy a car that looks seedy, and sometimes a few really trivial things being wrong will blind the prospective buyer to an otherwise excellent value. For example, what is more dejected looking than a car with a flat tire, or a sagging top, or a torn top boot? And on the other hand, what is more easily remedied? Some men would undoubtedly buy a car and overlook these minor defects, figuring that they would have them fixed at a later date. But in the meantime it is not to the interest of the Buick Motor Company nor its dealers to have Buick cars in need of attention running around in the territory, and the purchaser feels much better about it if these things are done in the first place.

MANY of these used car salesrooms are simple and inexpensive, but at the same time they are neat, clean and attractive. Instead of building any kind of a partition, the dealers have erected fairly solid frameworks covered with plaster-board or composition wall board of some kind, neatly paneled and tinted. To this is added a rug or two and some potted plants, and the used car room measures up very well with the new car salesroom.

Such methods as these have assisted greatly in keeping up the demand for Buick used cars, which is desirable from every standpoint. It is not at all unusual for Buick cars to change hands several times, and the man who purchases a used car is as much concerned about its re-sale value as the man who buys a new one. And the car that is in demand is of course the one that can be converted into money most easily.

Buick cars are built for many years of service and their reputation all over the world has been built up largely on the strength of their reliability and performance. It is the car of yesterday that has developed the popularity of the car of today, and the Buick organization is as jealous of the reputation of its used cars as it is of its new ones. The gamble in connection with buying a used car is entirely removed by dealing with a reputable Buick dealer, who has organized his used car department along these lines and can speak with confidence regarding the condition of every used car he sells.



This cut shows one of the loading docks in the Buick train shed and gives a fair conception of its magnitude.

BUICK SHIPPING FACILITIES

THE scrupulous care that is exercised throughout the designing and building of Buick Valve-in-Head motor cars is followed right through, even to the details of shipping.

From the final assembly and testing departments, Buick cars are driven under cover to a mammoth warehouse, constructed entirely of cement, brick, steel and glass. This structure is termed a warehouse for want of a better name. It is, in effect, a large, covered yard in which the cars are parked while the work of tagging and making up of shipments is carried out.

The area covered by this building is 860 x 320 feet and its capacity is normally 1000 cars. Provision has been made, however, for a mezzanine gallery which can be quickly hung from the massive concrete pillars supporting the roof, increasing the capacity of the building to about 2000 cars.

In other words, this building, in conjunction with the covered Buick train sheds, gives the Buick Motor Company a flexible loading capacity, entirely under cover, ranging up to a maximum of 2000 cars per day.

AT the south end of the main building are the offices of the Superintendent of Transportation, Outbound Freight Agent and the Car Record Department. This constitutes in itself a complete, centralized transportation system, constantly in touch with inbound and outbound cars to and from the great railroad centers, cooperating with the local railroad officials and in full command of the Buick system of yard tracks, embracing several miles of track, a number of freight cars, switch engines and train crews. A regular dispatching system is employed, with its own telephone and telegraph facilities.

Parallel with the main building and connected with it by wide covered driveways is the immense Buick train shed, roofed with glass and containing the great loading docks.

Six spur tracks, with a placement capacity of 108 freight cars at one time, run into the train shed alongside the loading docks. The

three center tracks have been equipped with a big electric crane, operating on an overhead track running the full length of the building.

Whenever it is impossible to secure enough box cars to take care of the shipment of Buick cars, flat cars of various types are used. This is where the electric crane comes into play, and by its use it is possible to load and double deck these flat cars in remarkably quick time. The automobiles are lifted bodily by the crane and lowered into place on the cars, where they are securely fastened in place and covered with tarpaulin covers to protect them from the weather.

During the nineteen months period ending July 30, 1918, 16,000 open cars were loaded in this manner, as this was the time of the great freight congestion and box cars were very hard to secure. Because of the completeness of its equipment, the Buick Motor Company was enabled to make use of thousands of return "empties" which would otherwise have been hauled hundreds of miles without a load.

THE six spur tracks in the train shed converge into a long lead track which parallels the main line of the Pere Marquette Railroad from the North Flint Station to the freight yards a mile to the north, and switching to and from the yards is entirely independent of the main line or passenger operations. The Main Division yards at Saginaw are only thirty miles away and cars come into Saginaw from five different lines of the Pere Marquette Railroad, thus affording excellent service both in and out.

Freight trains leave Flint every few hours in the day and cars loaded at the docks are checked up daily with the railroad officials and records of the outbound trains made, thus making it impossible to overlook any cars in the railroad yards.

A long distance telephone service has been installed, which enables the agent at the North Flint Station to talk with the car offices at Detroit and Saginaw at any time, thus keep-

ing them in close touch with the daily requirements of empty freight cars.

LIKE other branches of the Buick factory, these enclosed shipping facilities have been built with a view to future requirements as well as for those of the present. Roominess is the keynote of the entire scheme. The platforms are not merely wide enough to accommodate the cars, but there is ample room for the workmen to get around the cars on all sides, permitting fast work as well as minimizing the danger of damaging the finish of the cars.

At the rear of the train shed is a woodworking department where the blocks that hold the car wheels in place on the floor of the freight cars are made. These blocks have circular grooves in them to fit the tires, and are nailed securely to the floor of the car before and behind the wheels. In addition, strong canvas strips are passed between the spokes of each wheel and nailed to the floor on either side, independent of the blocks.

These strips alone are sufficient to hold the cars in place.

There is also a fire-proofing room, where the tarpaulins and cotton covers are treated with fireproofing solution to assist in safe transportation.

There is also a large, warm dining room for the employes.

The roof of the train shed is of glass, but as it is frequently necessary to work day and night during the rush season, the shed is also equipped with a full electric light system that will illuminate even the farthest corners.

THE equipment for loading cars is complete in every respect, from the big traveling crane down to the small wheeled "dollies" by means of which the automobiles are loaded into side door freight cars. The loading docks are the same height from the ground as the floors of the freight cars, and the cars to be loaded are stood along in rows before the cars into which they are to be loaded. The workmen begin at one end of the



At the left of this picture is the covered warehouse. In the center and on the right are the train shed buildings.



Rear view of the Buick warehouse and train sheds, showing the spur tracks from the main line running into them.

line and work down toward the other, so that a full track of cars is loaded at one switching operation.

And it develops that the final inspection of the cars in the final assembly department is not really the final inspection after all, as the shipping department has a final inspection all its own.

There are two inspectors—one from the sales department and one from the traffic department, and no freight car is sealed and shipped until this double inspection has been made. The car is inspected to see that it is in good condition in every way, and that it has its full equipment, including tools, battery, etc. It is examined to see that the electric lights and starter work properly—that the tires are properly inflated and so on down a long printed list. In every respect it must come up to the sales department standards, and is a check on the manufacturing department's check of a similar nature. This inspection is entirely independent from that of the factory proper.

At the same time, the blocking of the car in the freight car is checked, as well as the decking, the condition of the floor, roofs, etc. If anything is detected by either of these inspectors, it is remedied before the car is shipped.

Then the contents of the freight cars are checked—not once but twice, once on a blind



Another interior view of the train shed, showing docks, tracks and the immense traveling crane for loading flat cars.

tally. These two records are then compared and preserved. The seal record of the freight car is also taken before it leaves the loading docks and forms a part of the permanent records at the Buick factory.

IT WILL thus be seen that every possible precaution is taken to see that Buick cars are prepared for shipment in the most thorough manner. The machines enter the freight cars after the rigid inspection in the final assembly department. They are securely fastened in place for their long journey. They are again inspected by a representative of the sales department. The bills of lading are carefully made out and checked. The Buick yard facilities insure the prompt delivery of the freight

cars to the railroad company, and an automatic check relieves them of the danger of being held up in the local yards.

No rush of business is sufficient to prevent the prompt loading of the cars at the factory, provided it is possible for the railroad company to furnish sufficient cars for this purpose, and we have already seen what steps have been taken to make this possible. So vast are the Buick facilities in this respect and so highly perfected is the Buick system of loading and shipping, that it will be a long time before this equipment will have to be enlarged. Even then it will

be a comparatively simple matter, because both buildings are so laid out that they may be added to readily and still be as convenient as at present.

But the biggest point, to our way of thinking, is the fact that these cars are all loaded under cover, and are not exposed to the elements at any time until they reach their destination, where they may be unloaded as soon after arrival as the weather permits, assuring the Buick purchaser of a car that has not only been built right, but that has been kept in good condition up to the very hour of delivery. By that time the finish is well seasoned and there should be no danger in exposing it to the weather.



Method of blocking rear wheels



An interior view of the big warehouse, with a maximum capacity of 2000 cars. This building is the same length as the train shed and about the same width and protects the cars from the weather while making up shipments.



Method of blocking front wheels.

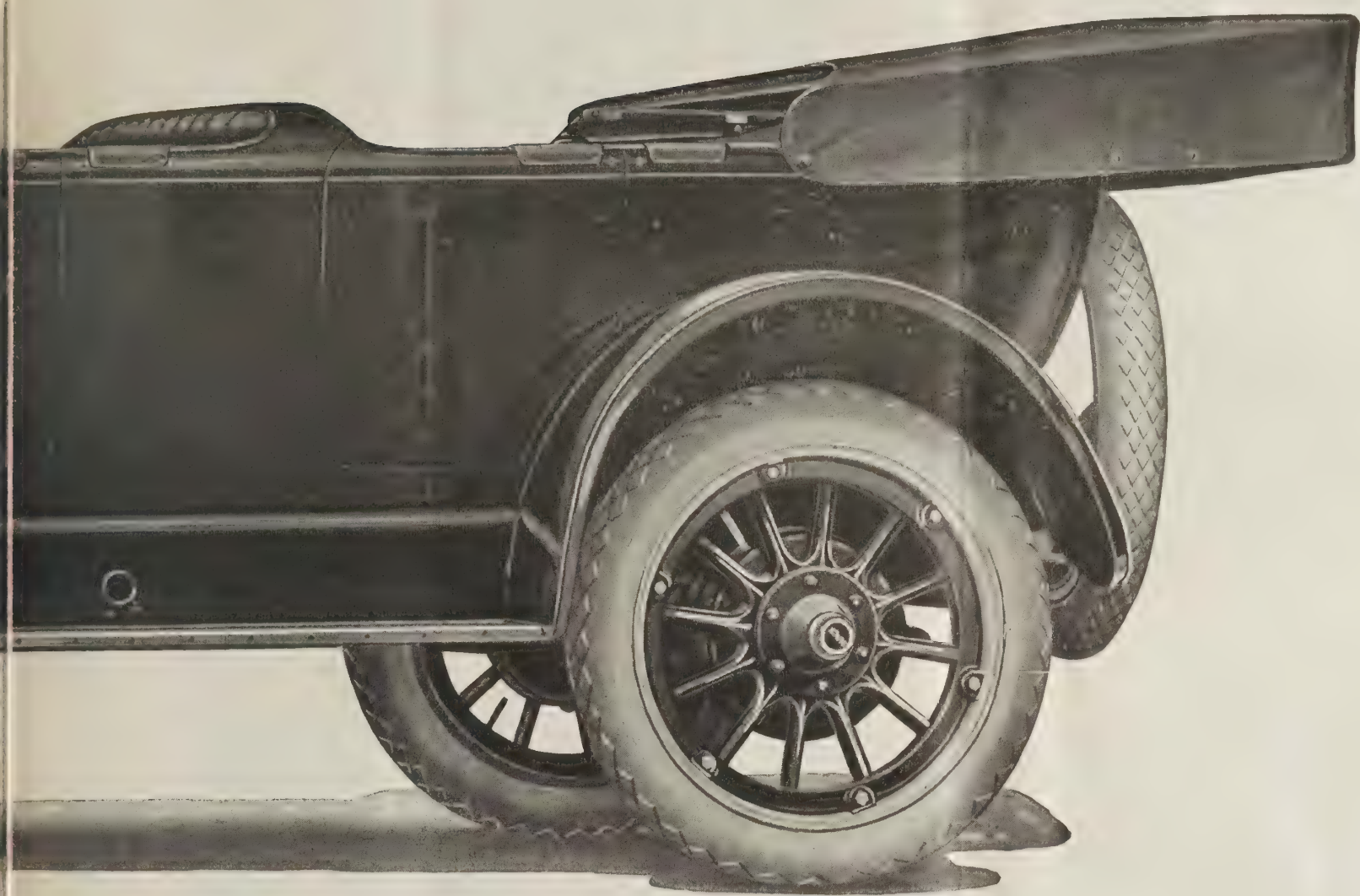


The Buick Model H-Six-49

IT'S a big value—this seven-passenger Buick model. It is big in comfort—in roominess—in power—in looks and in serviceability. The extra-length chassis is the same as that on which the seven-passenger Closed Model is built—an exact duplicate in size and quality. And it is this big chassis that makes possible the generous size of the tonneau, and the ample leg room for all seven passengers.

There are two extra folding seats—and comfortable seats, too—that fold away under the double cowl when not required.

The upholstery throughout is done in genuine hand-buffed black leather of fine quality, padded with real curled hair and supported by patented cushion springs made of tempered steel.



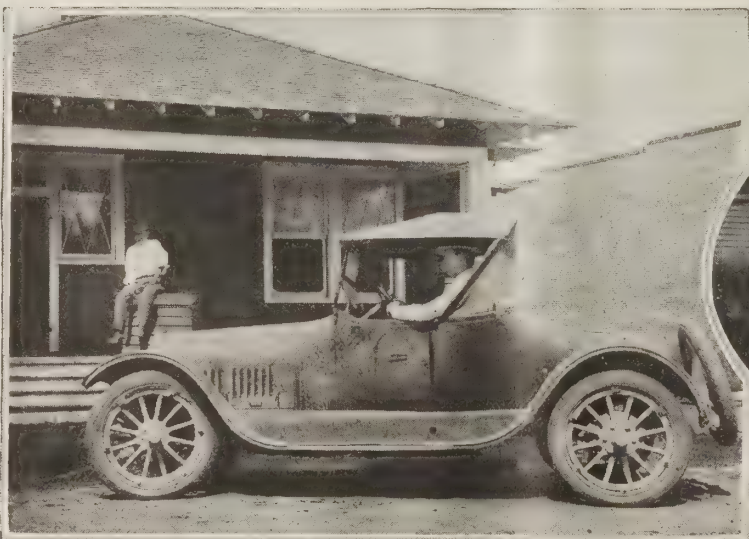
Seven-Passenger Open Car

THE body is made complete in the Buick factory — molded, upholstered and painted. The color is blue-black, and the richness of finish is secured by numerous coats of paint and varnish, hand-rubbed and inspected between coats.

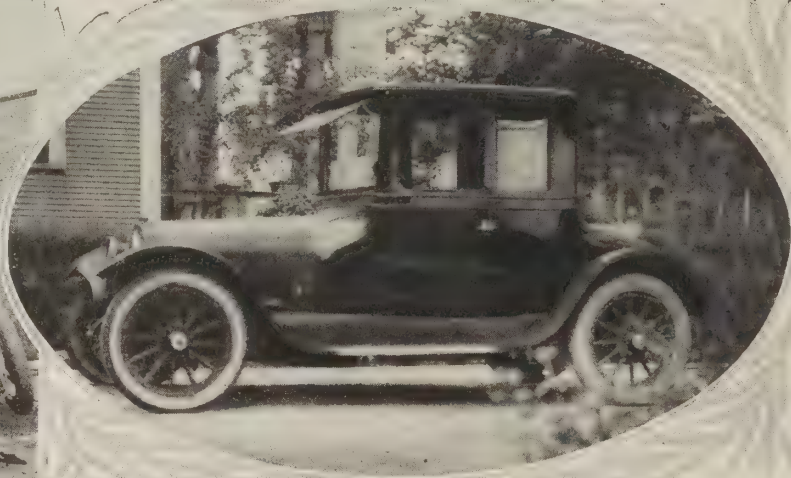
And so on through the car. Its entire manufacture is scrupulous in the extreme, to fulfill in serviceability the promises made by its fine appearance. Whether you sit behind the wheel, or ride in the tonneau, or inspect it from any angle as it stands at the curb, you will find that it measures up in every detail to the standard you have set for your next motor car. Any Buick dealer will be proud to show it to you.



Fine feathers may not make fine birds, but a fine place of business is usually indicative of a live and efficient organization. This is surely true in the case of the Casper Motor Company, of Casper, Wyoming, who handle Buick sales and service. Their building, within and without, is one of the finest motor car establishments to be found in the west and represents an expenditure in excess of \$45,000—this, too, in a town of only 7000 inhabitants. They attribute their success to two main factors—handling a car that is in great demand and rendering a class of service in keeping with the quality of the cars. Note that they are open for business by day and by night



This is Dr. J. D. Hunter, of Rayne, Louisiana, with his Buick E-44. He says that it has given him exceptional service, and especially so during the recent Influenza Epidemic, when, as he says, he gave it the acid test



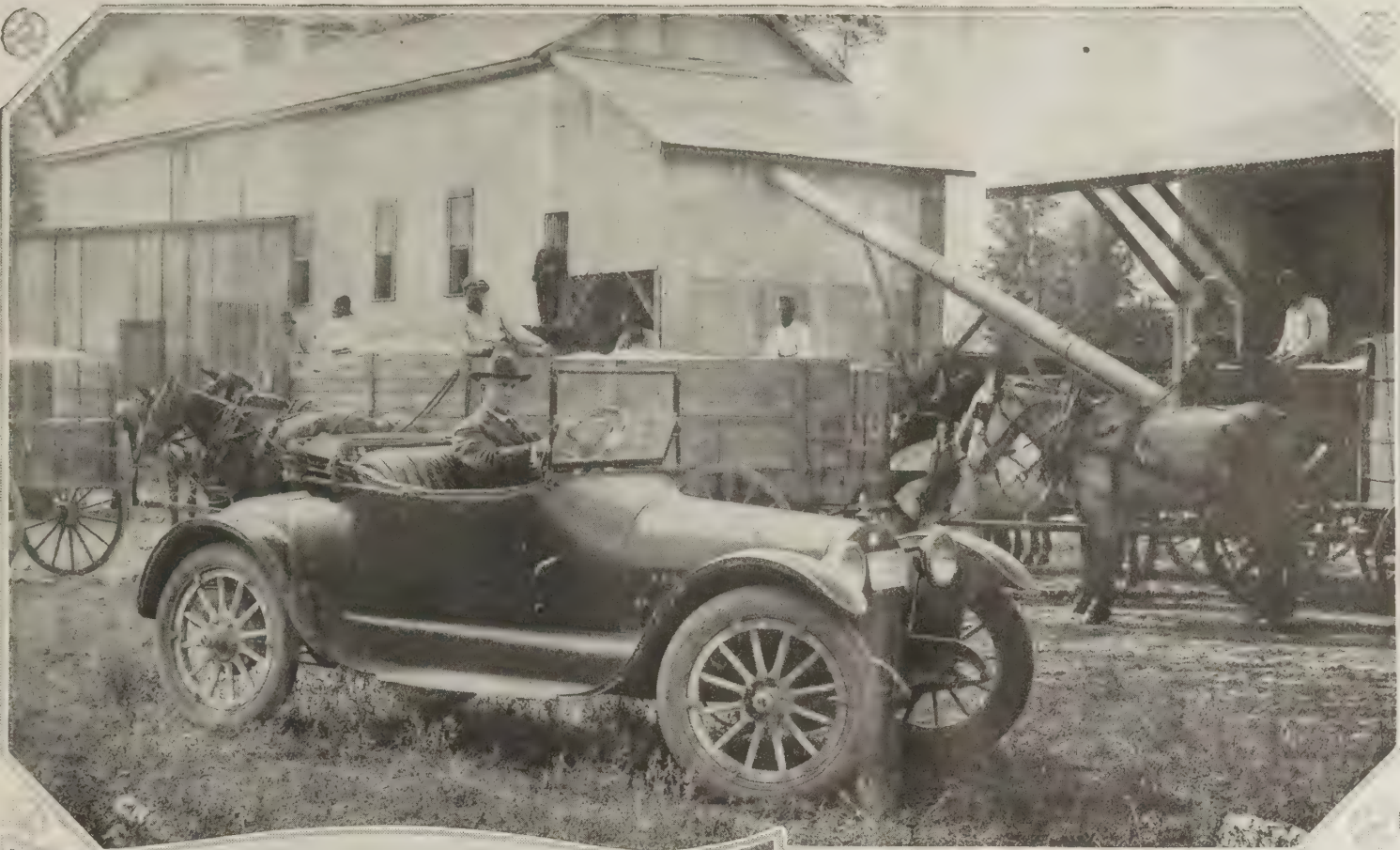
The Model E-46 shown here is the third Buick owned by Dr. C. G. Cole, of New Orleans, Louisiana. He says he finds this model unusually economical and considers it particularly adapted to a physician's needs



This is Mr. H. O. Penick, President of the Marine Paint Company, of New Orleans, Louisiana, in his Buick E-46. He also owns a Model E-50. His Coupe is used almost entirely for business. Mr. Penick says that after using both cars for a year, he is more than satisfied and expects to continue using Buicks so long as he uses automobiles



This is Dr. Henry F. Ader, a prominent specialist of New Orleans, now in the United States Public Health and Marine Hospital Service, who finds his Buick E-45 indispensable in his work



"I farm 4,000 acres with that car," said Mr. J. W. Lawler, of Dublin, Mississippi, referring to his second Buick car, a Model D-Six-44. Mr. Lawler is a man of diversified interests, for, besides personally superintending his plantation of 4,000 acres, he is a director in the Peoples Compress Company, of Clarksdale, and a director in the Coahoma Milling Company. The extent of his interests makes it imperative that he have a quick and reliable means of transportation, and his previous experience with the Buick resulted in the purchase of this capable roadster. The picture was taken in front of the cotton gin on Mr. Lawler's plantation.



This is Mr. A. E. Merchant, Manager of the New Orleans Gas Company, in his Buick E-45. Mr. Merchant has already driven his car over 15,000 miles and has only found it necessary to take his car to the shop once for inspection. He says as long as he needs a car for business he will continue to look to the Buick.



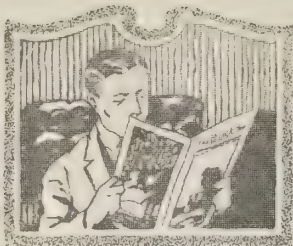
This is Mr. Edwin E. Crozat, Superintendent of The Jahncke Navigation Company, New Orleans, in his Buick E-45. Mr. Crozat uses his car exclusively for business, driving around New Orleans terminals, through railroad yards, and gives his car rough usage generally. He says the initial cost is the only cost so far, and of course he's enthusiastic over it.



The Manross Garage, Buick dealers in Bristol, Connecticut, have built up an enviable reputation for themselves with their customers by keeping constantly in touch with them. At various seasons of the year they send out bulletins and suggestions on the care of storage batteries and other parts of the cars, to insure that the Buick cars in that locality are always in the best of running condition. They have a large and well equipped establishment, including a service department that is in keeping with Buick service standards.



Mr. A. C. Carpenter, Manager of the Gulf Bag Company, of New Orleans, is an enthusiastic Buick Booster. He has owned several Buicks and says his E-45 gives him entire satisfaction.



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Winter Driving

THE practice of most Buick owners is to drive all the year 'round, and for this reason Buick cars have been equipped with every cold-weather convenience necessary to perfect driving comfort. Articles have recently appeared in this column to assist Buick owners to get the utmost efficiency from their cars during cold weather, such as handling the dash adjustments, cooling system, etc.

But there are some miscellaneous rules with which not all drivers are familiar, but the observance of which will often simplify driving even under the most trying conditions.

When driving in snow and sleet, and even in heavy rain, it is of course necessary to have the side curtains closed, for comfort. In this case, vision through the windshield is often seriously obstructed by the snow or rain on the glass. There are some patented windshield cleaners on the market that assist greatly in overcoming this condition, but if your car does not happen to be equipped with one of them you can get around the difficulty by adjusting the windshield. Leave the lower

half entirely closed and adjust the upper half so that it slants out enough to give you clear vision between the upper and lower glasses—an inch or two will suffice. In this way the snow or rain that beats in will not bother you to any extent.

When the streets are slippery, the safest practice is to use tire chains, particularly on the rear wheels. But should you be driving without them, be careful how you handle the brakes. Never apply the brakes suddenly under these conditions. The best method is to keep your foot off the clutch pedal, leaving the clutch in engagement, and then when you wish to apply the brakes take your foot off the throttle, close the hand throttle entirely and apply the brake gradually. This causes the motor to help you slow down and keeps the pressure perfectly equalized on both rear wheels. Do not apply the power suddenly on slippery streets. Open the throttle gradually.

If you happen to be driving downhill, you can use the motor as a brake by shifting into second or first speed on steeper grades, then close the throttle. You will rarely have to use the brake if you follow this method.

When the road is slippery, summer or winter, always drive at such a speed that you can stop with reasonable quickness without the danger of skidding. You have always got to figure on "the other fellow" and you never know what he is going to do. A car suddenly turning into the main thoroughfare from a side street, or a careless pedestrian who steps into your path from behind a car or other object beside the curb, will make it necessary for you to act quickly to prevent accident; and you can do this if you have your car perfectly under control.

It is more important to be able to stop your car than to start it, and the careful driver will be guided by this rule.

Observe the traffic rules to the letter. They are founded on good common sense in most cases, as are the rules governing "courtesy of the road." Know the streets and roads in your locality that have the "right of way" and then do not, in all cases, be too insistent on maintaining your right of way. There is no safer or more pleasant mode of transportation than motoring. The most important rule to observe is: Keep your car under control at all times.

BUICK STABILITY HELPS VARIOUS INDUSTRIES

Better than Railroads

MR. GEORGE R. GAY, of the Santa Cruz Portland Cement Company, San Francisco, writes: "We have found the Buick to be best adapted to our uses because of its economical maintenance and operating costs. Automobiles are a positive necessity in our business because of the fact that even in nor-

mal times the railroad transportation is such that we cannot adequately cover our territory for the reason that it is frequently impossible for our representatives to transact their business at the various towns along the railroad between trains without wasting a great deal of time and suffering the inconvenience of having their rest broken, in many instances, due to their having to catch trains throughout the night in addition to which the railroad transportation does not permit them to reach many of the points at which our product is used, located off the railroad. In fact, the necessities of business are such that we could not afford to be without motor transportation."

Can't Afford Delays: Use Buicks

MR. H. S. TRUSCOTT, Manager of the Union Sugar Company, Betteravia, California, writes: "We first introduced Buicks into our organization in 1913, when we purchased three cars. These gave such excellent service that at present we are operating four 1918 and four 1915 models.

"These cars are in constant use in connection with transporting our Agricultural Superintendent and his assistants. It is necessary for us to use automobiles in connection with our agricultural operations, as our holdings are scattered over a large area, radiating at points 35 miles distant.

"It is probable you would like us to give the reason for our selecting Buicks. We have every confidence in the performance of Buick cars, in that they are so well constructed that we are quite certain when one of our employees starts out to reach a certain point he is sure to get there. Delays in our business would mean serious loss, so it is essential that we equip our men with absolutely reliable automobiles. Owing to their moderate cost the initial investment is conservative, and lastly we have found that no other car compares as favorably as the Buick when seeking to turn in an automobile that has seen hard service. In other words, the return value of a used Buick car stands in a class by itself.

"The roads connecting our various ranches are very sandy and full of chuck holes. In fact, our cars are subject to considerable abuse, as time with us means money and it is not possible for us to favor a car as much as we would desire.

"We find the wear, tear and upkeep on the Buick is very nominal. We know of no other car that can compare with it. The riding qualities leave nothing to be desired and the mileage on tires is highly satisfactory."

Buicks Save Valuable Time

MR. JOHN HOOD, local engineer for the General Electric Company, of San Francisco, writes as follows: "Our Buick cars are used primarily to enable our sales engineers to cover their various territories more rapidly and thoroughly than can be done without the use of motor cars. The work of these men, involving as it does the rendering of engineering service as well as working with sales prospects, necessitates going to out-of-the-way places at times and under conditions which frequently would not permit of using other means of transportation.

"A relatively small number of men with cars can maintain service in a territory which, with other means of transportation, would require a considerably larger force. As our sales engineers are technically trained men it is particularly important that their time be utilized to the best advantage.

"The Buick cars of the Company are used by men working out of the San Francisco office cover territories embracing in general the northern and central part of California and the western half of Nevada."

No Doubt About It

MR. W. H. NICHOLS, Buick dealer at South Bend, Indiana, relates the following amusing incident, which happened while he was driving cars away from the factory:

"When approaching a very bad hill, I noticed an automobile at the top of the hill, stuck in the mud. As the roads were very bad, I concluded I had better go to the top of the hill and investigate. After spending considerable time assisting the man who was stuck, a colored man came walking up the hill and with his help we succeeded in getting the car out.

"I suggested to the colored man that he had better put on lots of steam or he would likely hang up as did our friend. He looked at me in a sort of disgusted way and said, 'I guess you don't know the kind of a car I's got. I's got a Buick,' and then started off with the air of one who felt he had dispelled all doubt of his ability to get over the hill without trouble."

LOOK PLEASANT, PLEASE

Continued from page four

—bearing photographs. Then came Jim Van Dyne, cashier of the First National, Sheriff Stevens, Boppert, the druggist, Professor Wilgus of the High School and P. S. Grilling.

After that they came by the tens and dozens. The pay streak of Riverbank vanity had been touched. It seemed as if every man in Riverbank except Sam Grosbeck was bringing a photograph of himself. Sam was busy delivering photographs. But John Gutman, his heavy, glass-headed cane in hand, defied them all to touch his portrait. It was, at the end of the day, the only photograph of a prominent Riverbankian hanging on the library wall. The next day Sue Bilkins resumed her old position behind the library desk. Miss Margus had left Riverbank. Sam Grosbeck followed her a week later. He was able to build a handsome home in Derlingport.

The Library Board met and took up the matter of the photographs, and as soon as it was known that they had taken up the matter all Riverbank besieged them. Not one-tenth of the photographs could be hung, of course, and bitter enmity was aroused in the hearts of the unhung. Even those who were hung on the walls were angry. The feuds that started that day are still growing. The old Library Board has been thrown out of office, and many of the originally hung photographs have been taken down and replaced by others.

The day Sue Bilkins took the position of librarian, she found under the desk a large, flatish parcel.

"Dear Miss Bilkins," was written on it, "when the row is over and things settle down again, you can stick this picture of me on the library wall somewhere. We (my wife and me) would like to have it there.—Sam Grosbeck."

The Liberty Valve-in-Head Motor

PRIOR to the coming of the Liberty motor, America was anything but a leader in the aeroplane field, in spite of the fact that the aeroplane is really an American invention. But today the Liberty motor stands upon its record, made under the most difficult service conditions, as the world's premier aeroplane motor, and it is so acknowledged even in Europe.

The Liberty motor is purely an American product. It was designed by a committee composed of some of the leading motor designers of America, after a careful investigation of the leading types of aeroplane motors used in European countries.

The service required of an aeroplane motor is very severe. It is running under full load all the time, and to insure the safety of the occupants of the plane, it must be efficient and dependable in every respect.

The question of power in relation to weight is a particularly important one, because all aeroplanes are so much heavier than the medium through which they travel. And the Liberty motor delivers more power in relation to its weight than any other aeroplane motor ever built.

Yet it has not been necessary to sacrifice strength in the construction of this motor—in fact, it was impossible to do so, because strength was essential to safety.

The committee, as previously stated, was formed of some of the leading motor designers of America—men who were connected with various companies building internal combustion motors of several different types. Yet when it came to a question of building the Liberty motor, they agreed upon the Valve-in-Head principle of design as the one that would give the combination of power, strength and dependability.

The Buick Motor Company, for nearly twenty years, has stoutly maintained that this combination is just as desirable in a motor car as it is necessary in an aeroplane engine, and because they were the pioneer builders of Valve-in-Head motors it followed quite naturally that they were selected to build Liberty motors for the government.

In discussing internal combustion motors, it is first necessary to get one fact firmly fixed in mind, namely—that they are all heat engines. In other words, they derive their power by converting the fuel used in operating them into heat, and it is the expansion of the heated gases resulting from each explosion in the cylinders that supplies the impulses necessary to run the motors.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working

power, the greater the efficiency—or economy—of the motor will be.

In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all

because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases both inlet and exhaust valves form a part of the combustion chamber, where the heat is greatest, and in consequence it is necessary to water jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. This pocket is water jacketed. In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water jacketed, it follows that the Valve-in-Head type affords the minimum of water jacketed space that is possible to be secured for any given size of cylinder.

Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the big valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is more perfect in the Buick motor because the mixture is purer.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other types of motors, a quicker ignition of the charge and a smaller loss of heat through the water jackets. The sum of these advantages is more power with less gasoline consumption.

To these characteristics of design is added in the Buick motor the fruit of nearly twenty years' experience in building Valve-in-Head motors exclusively, and in improving the design consistently every season throughout that period.



Three views of the Buick-built Liberty Motor

of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water jacketed space there is in a motor, the greater the thermal (heat) efficiency will be,

The Buick in General Service



This is Mr. C. L. Drake, of Jonesboro, Arkansas, starting on his usual trip through Northern Arkansas and Southern Missouri. He represents the Central Shoe

Company of Kansas City, Mo. Mr. Drake has driven this Buick D-45 over 18,000 miles and he says it does "just a little bit more" than he could expect of any automobile.

The Land of the Setting Sun

LAST November I purchased my second Buick (Model E-Six-45) from your agent here, the Central Realty and Insurance Company," writes Mr. B. A. Heidenreich, of McComb City, Mississippi. My health being bad and through the advice of my physician who suggested my dropping all business and roughing it for awhile, I decided to take my family and go to the Pacific Coast.

"On May 25th, I loaded my Buick with a complete camping outfit and, with my wife, two boys and a relative, making five in the party, and 500 pounds of extra baggage, we pulled out for the Land of the Setting Sun.

"Our travel carried us through Mississippi, Louisiana, Texas, New Mexico, Arizona, California, Nevada, Utah, Wyoming and Colorado. We visited all the large cities and all the places of interest, including Grand Canyon, Arizona, Yosemite Valley and Lake Tahoe. We toured through the entire state of California, visiting every place of interest and had some wonderful experiences.

"My son, 16 years of age, handled the car the entire trip. At night we camped by the side of our faithful old Buick and in the morning we folded our tents and were ready for another day of sightseeing. Never on the entire trip did the faithful old boy fail us when our driver put his foot on the starter.

"On August 25 we arrived at home, having covered 10,200 miles with a total expense of 65 cents for a new fan belt for our engine. Of course we purchased one set of new casings, which we would have required had we remained at home and made the mileage. We helped a number of high priced cars out of trouble and

never once did we require any help of any kind. I am satisfied I converted lots of people to the Buick ranks on this trip after explaining the wonderful performance of this car. I am a strong booster for the Buick and think you have the most remarkable car on the market."

Would Be Lost Without It

FROM DR. W. R. SPANGLER, Fresno, California: "My home is located well out in this city, and I have great need and use for the Buick purchased from you in attending to my practice. Would be lost without it. Waiting for street cars is a loss of time."

THE articles on this page, from different sections of the country and from people who use their Buick cars for different classes of service, all emphasize one point in connection with Buick cars that is important to every automobile owner; viz., that they are serviceable to a remarkable degree under varying conditions.

In considering the design and manufacture of Buick cars, it should be borne in mind that they are made to cope with the conditions encountered in business service, which is another way of saying that they are built to withstand every conceivable kind of road and weather condition.

Buick cars have distinguished themselves over a long period of years in many classes of service, but they have more particularly proven themselves in the ranks of business, where things must move with clocklike regularity and where business equipment is judged by its ability to produce.

This is the Buick conception of quality. And it is a quality that is easily understood and appreciated. The sincere effort of the Buick Motor Company is to build such quality, not only into the working parts of the car, but into the details that contribute to comfort, convenience and appearance.

From Five Brothers

THE five Christensen brothers are farmers near Lyons, Nebraska, and are all enthusiastic owners of Buick cars. Some of them are now using their second Buicks—but we are getting ahead of our story. Here is a short letter from each:

"I have a Model 25, 1915 Touring Car, purchased June 1, 1915. It has run 11,000 miles without the least trouble and without any expense besides oil and tires. It is still running on one of the original tires.

WALDO CHRISTENSEN."

"Have had two Buicks—the first a Model 25, 1914, which had run about 40,000 miles when I got a D-44, 1916 Six. Both have given complete satisfaction. I went 10,000 miles on the first set of tires. On a trip of 56 miles I drove on an average of 41 miles per hour.

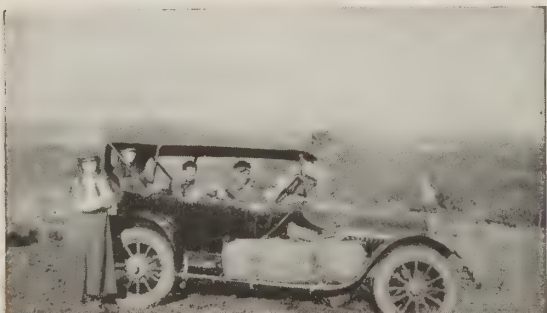
J. L. CHRISTENSEN."

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FRED. A. CHRISTENSEN.
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THE Buick BULLETIN

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MARCH 1919

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In this issue—THE AUTOMOBILE SCHOOL—Page 5



Content

The homely house that harbours quiet rest,
The cottage that affords no pride nor care,
The mean that 'grees with country music best,
The sweet consort of mirth and modest fare,
Obscured life sits down, a type of bliss;
A mind content both crown and kingdom is.

—Robert Greene

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THE ABSENTEE

By JEFFREY FARNOL

Illustrated by A. W. Grann

DUNLEARY is the ordinary type of Irish village, with a group of low cottages scattered along the uneven road which climbs the hill to the old castle of Dunleary. It was a strange place—this castle—a combination of medieval savagery and latter-day comfort, and I sat awhile inwardly imagining life in such a place.

My observations were disturbed by a cow, which had approached unheard upon the grass. For some time we eyed each other solemnly, until we were aroused by a voice.

"Bridget!" it called, and then again, "Bridget!" It was a girl's voice, such as one might describe as "musical." The cow ceased chewing for a moment.

"Bridget!" called the voice again at this moment, from just above me, "Bridge—Oh! would you mind driving her in here through that gate?"—it broke off.

I rose to my feet and raised my cap. As I did so, I became conscious of a pair of eyes that looked at me from the depths of a sun-bonnet—eyes of a wonderful indescribable blue, above which was the dim shadow of her dark hair.

"Would you mind driving Bridget in through that gate?" she repeated, pointing to one a little further down the road.

"Yes—oh, certainly—with pleasure," I answered hurriedly, becoming suddenly aware of her question, and forthwith, by sundry dexterous pushes, I escorted Bridget through the gate. The girl thanked me, and turned towards where stood two pails, with an air of finality.

But I had no idea of letting the affair stop so soon.

"I've been studying the castle," I hazarded.

"It's a dear old place," she said, glancing at it over her shoulder, "some parts of it are very old, you know."

She turned to look at the castle once more, and then with a little sigh came towards her pails.

"By the way," I said, "whom does it belong to now?"

"To the Earl of Keith," she answered, stooping above her pails.

"Does he live here?"

The girl straightened herself suddenly. "Of course not," she said, with a ring of anger in her voice—"he is one of our absentee landlords

bye, and thank you." Catching up her pails, she was off and away before I could proffer my assistance, her white frock, of some thin material, showing every curve of her strong, shapely young body.

"Moir," I said to myself as I filled my pipe, and turned down the road towards the "Castle Inn," kept by Dennis Rafferty, where I was staying, "Moir! Now I wonder if I could guess her other name!"

I found Mr. Dennis Rafferty leaning against the door post, smoking a short clay.

"Evenin', Mr. Armstrong, sorr!" he said as I came up.

"Good evening," I returned. "I've been looking at the Castle."

"An ould place," Mr. Rafferty said slowly, "and once the home of kings!"

"So I understand," I began.

"An' now," he continued solemnly, "it belongs to them as niver troubles to come a-nigh it; the old Earl niver saw the place but once, and the new Earl lives in England!"

"So I understand," I repeated, "someone was telling me of the Earl—"

"That'll be Miss Moira," said Mr. Rafferty.

"Who's Moira?" I asked.

"A Desmond, and the handsomest of them all, sorr!"

An enquiring pig strolled slowly up, and paused to gaze meditatively through the open doorway into the unexplored mysteries of the tap room beyond.

"An' it's wantin' to marry her they are, to a man she has niver clapped eyes on, sorr!" said Mr. Rafferty, shaking his head sadly.

"What I says to meself is, says I—'why can't these English lords an' dooks an' what not marry wives in their own country. We don't want 'em, an' as for Moira, there's many a pretty gentleman in the ould country as would give the eyes of him for her!'"

"I'm not surprised to hear that," I exclaimed.

"And she—?"

"Oh, she just flouts 'em, does Moira."

"Good! I'm glad of it," I replied.



"An' it's wantin' to marry her they are, to a man she has niver clapped eyes on, sorr!"

who never trouble to come near their estates—so long as the rents are paid regularly—besides—he is an Englishman!"

We stood in silence.

"Moir," called a sudden voice from the direction of the white cottage that nestled under the shadow of the great many-armed elm-tree, "Moir!"

"Good gracious!" exclaimed the girl, "I forgot—it must be long past milking-time! Good-

"An I'll just bet my ould poipe," pursued Mr. Rafferty—"that she'll just sind this Earl o' Keith back to England with a flea in his ear!"

The pig had crept up under cover of the conversation, and stood with one foot over the threshold. Mr. Rafferty reached a stick from a corner and proceeded to prod him severely, whereupon the pig turned and departed, followed by Mr. Rafferty.

"Moira!" I said to myself, as I removed my tie before the diminutive looking-glass a couple of hours later, "Moira—"

The sun was but newly risen next morning as I leaned upon a certain gate, and my eyes wandered to where the white walls of a cottage, half hidden in the shade of a mighty elm, peeped at me through a leafy screen of boughs and creepers.

"Such a girl—with such a name—could only live in such a cottage," I told myself. That I must see and speak to her again I had decided last night—but how? I sat down upon the gate and lighted my pipe to think the matter over.

As I sat there dangling my legs, I descried in the distance the dim form of Bridget, and at the sight an idea occurred to me. I could manage to lose her, and find her again at the right moment!

I leapt to my feet and set off in chase of Bridget, having first left the gate invitingly open. But it is one thing to come to a determination and quite another to carry it out successfully—especially if there happens to be a cow in the case.

Bridget saw me coming and set off with that long slouching stride peculiar to her kind. I could have shouted in triumph as she made straight for the gate, but alas! when within a few yards of it she swerved suddenly and made off to the right.

I had already pursued Bridget twice round the field, when I was brought up, by catching sight of a certain big white sun-bonnet.

"Good morning!" I said as she came up—"Isn't the sun glorious?" She glanced at me for a moment with great solemn eyes, but her red mouth quivered.

"An' what are ye after doin' with Mrs. Mulvaney's cow?" she asked.

The red lips got altogether beyond her control, and she laughed merrily. "If you on'y knew how ridiculously funny you looked! But you ought to know it is very wrong, to chase a milch-cow—I ought to be very angry with you," she went on more seriously.

"But I'm so sorry," I answered penitently—"and I have the greatest respect for Bridget—although she did introduce us, she omitted to mention that my name is Martin Armstrong"—and I swept off my cap with an old-world bow.

"An' sure it's Moira Desmond that's after wishin' the top of the mornin' to your honor," she said, returning my salute with a laughing curtsey.

We strolled along, laughing and chatting, and by the time we reached the cottage we were quite old friends.

"And do you live here always?" I asked as she paused with one hand on the tiny gate.

"When I can get away from Dublin, I come here to stay with my old nurse."

"Why, Moira, acushla!" cried a voice at this moment—"where have you been?" The red-cheeked, merry-eyed old lady stopped as she caught sight of us.

"If you would allow me to assist," I said, lifting my cap—"I should be delighted." Moira laughed scoffingly, and after a moment's hesitation old Nanny laughed, too, and leading me into the cool fragrance of the dairy, initiated me into the mystery of butter-making.

As the days passed I became quite an expert with the churn, and, incidentally, my acquaintance with Moira ripened into friendship—yet try how I would, I could get no further. No matter by what devious paths I approached the subject, she seemed to check me effectually. It was after one of these rebuffs, one morning

some three weeks after my eventful meeting with Bridget, that I paused in the middle of churning.

"How is it, Miss Moira," I asked—"that you never let me say what I want to say?"

"Oh," she cried with a laugh, "don't stop—go on—keep turning or the butter will be quite spoiled!"

"Then in this case, Moira, let it spoil; what is a lot of—er—of swashy milk in comparison with a fellow's life-long happiness."

But as I spoke the door opened and Nanny appeared, and with shrill reproaches drove me back to the churn, and, bringing her knitting, sat on guard.

That evening, contrary to custom, I saw nothing of Moira, and after loafing vainly about the meadows and exploring all her favorite haunts without success, I returned to the Castle Inn, and retired to bed.

Next morning it was the same—Moira was nowhere to be found. "Had my words offended her in any way?" I asked myself. It was a glorious morning, and I wandered across the meadows. Finally, I turned moodily back again, and finding Mr. Rafferty at work upon his potato patch, I fetched a spade and fell to digging beside him.

After a bit Mr. Rafferty leaned upon his spade and shook his head.

"It's of the colleen I'm thinkin'," he said presently. "It's goin' to Dublin tomorrow she is, so Nanny tells me—to marry this Earl o' Keith."

"She goes tomorrow!" I exclaimed aghast.



"An' what are ye after doin' with Mrs. Mulvaney's cow?" she asked

"She does—bad cess to it!" added Mr. Rafferty.

"But I thought you were so certain that she would send this Keith chap back with a—er—a flea in his ear!" I demurred.

Mr. Rafferty scratched the corner of his mouth thoughtfully. "It's her grandfather's wish, and his will is Moira's."

Somehow agriculture had lost all interest for me, so that presently, resuming my coat, I turned my back upon the potato patch, and set off down the hill to where the brook wound

away among the shade of the alders. In one place the stream broadens suddenly, with a tiny green islet in the middle which is reached by stepping-stones and it was here that I found Moira. Beside her lay an open book, and I noticed that her hair had come loose and that one thick black braid hung low upon her neck.

I must have stood there watching her for fully two minutes ere she looked up.

I advanced. "May I sit down?" I said, and without giving her time to refuse, I sank upon the grass beside her.

"I've been looking for you all day long," I said plaintively.

"And a nice waste of time it has been."

"Well, that depends—since I have found you."

"How depends?" she asked lightly.

"It depends altogether upon whether in this instance—findings are keepings!"

She did not answer, and turning I met her eyes for a moment, then they dropped.

I find a certain amount of difficulty in constructing an intelligible sentence at most times, but it was particularly marked upon this occasion. However, she let me stammer out my blundering confession to the end, without interrupting.

There was a long silence, during which the ripple of the water amongst the willows seemed strangely loud. Moira sat half turned away from me, so that her face was hidden, and I was suddenly possessed of the uncomfortable idea that she was laughing at me.

"I'm afraid I've made rather a mess of it," I said weakly—"I generally do when it comes to saying things—but don't laugh at me, Moira!"

"Laugh at you!" She turned towards me as she spoke, and her hands came towards me with a gesture, half-shy, half-passionate. Moira was not laughing at me.

In another moment I should have kissed her—but she repulsed me almost fiercely.

"No, no," she cried. "I ought to have told you—I am not free—I am to marry the Earl of Keith."

"But—do you love him?"

"I have never seen him," she said, pushing back the heavy hair from her brows. "Listen, it is like this—Dunleary with all the land for miles around is ours, everything but the Castle, and that my great-grandfather sold to the then Earl of Keith, since when the one great ambition of my grandfather has been to recover the old place."

"Naturally," I put in, as she paused.

"Well," she continued, "the late Earl was a friend of my grandfather's, and though he refused to

part with it during his lifetime, it was arranged between them, by the will of each, that their descendants should be the means of uniting the Castle with the estates again."

"In other words, the Castle is to marry the acres."

"Yes," she answered.

"And would you let such a whim come between us, Moira?"

"Ah! You do not understand," she cried, "for unless the new Earl carries out his uncle's will in this matter, he [Continued on page 12]

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

PRACTICALLY everybody today is interested in motor cars, but nowhere is the interest greater than among the rising generation—a fact that speaks well for the future development of the motor car and its application to every-day life. Small boys can name the various makes of cars as they pass on the street, a surprising number of them can drive a car with considerable credit, and nearly all of them are keen to explore the mysteries of the forces and principles that “make the wheels go ’round.”

This condition is simply a reflection of the interest in motor cars displayed by their elders. And as a result we find automobile schools for students of all ages in all sections of the country. Some of them are included in certain courses in high schools and colleges, and others are privately operated enterprises.

Just as there are good and poor motor cars, so there are good and poor automobile schools. But for the most part they are good, and the instruction in the good schools follows logically about the same steps as are followed in a motor car factory where the cars are built rather than assembled from purchased parts.

In the Buick factory we build our own units—motors, radiators, axles and so on. And before the car is finished and ready to run, every operation has been performed on every part and checked to see that it is right before the next step is taken. So with a good automobile school, instead of starting the course by teaching the students how to drive, that is the last thing covered, if indeed it is covered at all.

For the main thing is to get the principles thoroughly clear to the students, and to make them understand *why* certain things happen, rather than to demonstrate that they *do* happen. Anybody can learn to drive in a few hours, because it is a comparatively simple thing to do. But to get an accurate knowledge of motor car design and construction that will enable the student to think and talk correctly about motor cars, and to know good or bad design when he sees it, the work must be constructive and thorough, and it must start at the beginning.

For example, the first step in building a Buick car is to rivet the side members and cross members of the frame together. A properly conducted class

in an automobile school will be drilled on these points. They will be told where the greatest strain on the frame occurs under various conditions; they will be told why the outside cross members are not riveted to the extreme ends of the frame, instead of being placed at certain distances from the ends. They will be told why channel sections are used for the side members and cross members—why angle braces are used—why reinforcement plates are triangular in shape and flanged at the base. And by the time these classes are ready to pass on to the other chassis units they will be able to tell whether the frame on any car they see is well fitted to do its work, just by finding out what material it is made of, the weight of the car and a quick inspection of the frame themselves to see how it is put together.

This is a simple illustration, but it will serve to show that there are engineering problems, as well as manufacturing problems, to solve in connection with even the least complicated parts of a motor car.

THE next step would logically be the motor. The student in a good automobile school will first take up the study of the principles behind the internal combustion engine. He will doubtless be surprised at first to learn that all such engines are run by the expansion of heated gases, rather than by explosions. And then he will learn why it is necessary to water-jacket the cylinders and exhaust valves, and what types of motors make possible the greatest economy in water-jacketed space—for naturally the smaller the water-jacketed area, the more economical the engine will be in fuel consumption. He will learn that valves must have a certain relation to the size of the cylinder bore—that certain materials make the best motor bearings. He will learn the theory and practice of lubrication—of drop-forging—of heat treatment—of casting metals.

After a few sessions, the student will begin to see the wonderful side of the motor car. As one great writer has put it, “this mysterious force, that is yet more logical than I.” For a well designed motor car, as the same writer goes on to explain, is more logical than any man because it acts wholly in accordance with natural laws and will continue to do so until one of those laws is violated. And because the student becomes familiar with those

laws as well as the mere names of the various parts, he ripens in knowledge of what to do to conform to those laws as well as what to do when any of them are violated.

From the motor the student passes to the clutch, which hooks the power up with the driving mechanism or disconnects it at the will of the operator. Next comes the transmission, the universal joints, the drive shaft, the rear axle with its marvelous differential gears and pinions, and then the less complex matters of running gear and other parts.

THE Buick Motor Company is heartily in favor of these automobile schools, because they will most certainly have the effect of making every class of people take the motor car more seriously. That may seem an odd statement, but it is true that hundreds of thousands—yes, millions—of people in this country have not found the time to be as conversant with motor cars as they would like, or as it would be to their interests to be.

Good automobile schools will be a big factor in developing a better class of motor car mechanics thousands of miles away from the big automobile factory centers. They will interest more of the young men in taking up motor car designing and building as a life work. And best of all, they will succeed in giving thousands of people, both men and women, a good insight into the things they ought to know before they purchase a motor car for their own use, and enable them to get the utmost efficiency from their cars.

In this light, the tuition fee for a course in such a school is money well invested. In many cases, the course would more than pay for itself in the lengthened life of a single motor car, due to the fact that the owner would be better equipped to keep the car in proper running condition, or to see that it was kept in such condition. These schools are now having a beneficial effect on the sale of Buick cars, because they give a widespread knowledge of the quality of Buick cars; and the Valve-in-Head principle of motor design, coupled with the fact that Buick cars are built complete in the Buick factory, is daily growing in significance to people who regard good mechanism as the most important quality in a good motor car.

Forging the Liberty Crankshaft

THE crankshaft has been referred to as the backbone of the gasoline engine, because it must withstand the impact of every explosion that takes place in the cylinders. Its attributes of course are many, but the fundamental requirement is strength.

In telling the story of the Liberty motor crankshafts, as built in the Buick factory, we logically begin with the metallurgical and drop forge departments, because it was here that the admirable physical qualities of the Liberty motor crankshaft were worked out and perfected.

It should be understood at the outset that the Buick experts were given considerable latitude in the construction of the backbone of the Liberty motor. In other words, the Aircraft Department was not so much interested in the chemical analysis of the materials used as it was in the physical tests that the finished shafts could stand. But the tests themselves were extremely rigid. They went into much technical detail and specified the elongation—the torsional strain and numerous other requirements that the shafts would be expected to pass before receiving the O. K. of the government experts, who were stationed at the Buick factory to check every detail of every Liberty motor part before it could be installed in the motor. To illustrate the scrupulous care that was exercised in these numerous inspections, the slightest scratch on the mirror-like surface of a completed crankshaft which might indicate a flaw resulted in its rejection.



THE size and shape of the shaft were of course governed by the blue prints from which the work was done, and the Buick problem was to equip the various departments to build the shafts in quantities and of such quality as to answer the government's requirements.

After the preliminary work in the engineering laboratories, the next step was to make the dies. This was done in the Buick die making department, which is operated as a part of the big drop forge plant. These dies were fashioned in exactly the same manner as the dies for Buick crankshafts, and as a result of the years of drop forging and die making experience of the Buick experts, it was possible to so fashion these dies that the shafts, when forged, were completed in a single trip through the hammers and ready for the machining operations, without further twisting. This is a feat that was not accomplished by any other drop forge plant engaged in forging Liberty motor crankshafts, and not only cut down the cost of forging the shafts but avoided disturbing the metal after it had been fashioned to shape.

THE dies were made in two sections and were of great size. Each section was made of a solid block of nickel steel, and some idea of their value may be formed from the fact that the raw material itself is worth about 15 cents per pound, to say nothing of the extremely accurate hand work necessary to make them perfect.



Upper picture shows the Buick forge plant and the lower the steel yards and crane at the rear of the plant

The reason that such expensive material is used in the manufacture of drop forging dies is that the terrific force of the great drop forge hammers constantly beating against them will soon ruin dies that are not made of tough metal that is capable of withstanding the blows. The Liberty crankshaft was a large forging and the largest hammers in the Buick forge plant were used in making them.

The material used in the Buick-built Liberty crankshafts was chrome nickel steel of a special formula, and every bit of this steel, as it arrived at the factory, was subjected to the same rigid metallurgical and chemical tests as those employed in checking the material for Buick cars. This was in addition to the government inspections.

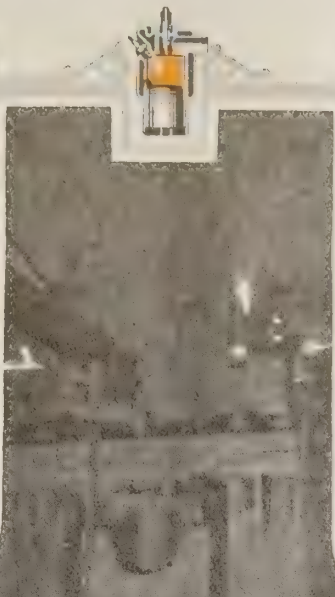
As soon as the material was approved for stock, the ends of the bars were painted with

certain colors by which the material was identified by the men who brought the bars from the steel yard to the huge shears which cut the bars into proper lengths for forging. These bars, like those used in making Buick crankshafts, were too heavy to be handled readily by crews of men with trucks, and were brought to the shears by the immense traveling crane with an electric magnet attachment which is used for handling all the material in the Buick steel yards, including the unloading of this material from the freight cars.

From the shears the shorter lengths of bar stock were carried by electric floor trucks to the furnaces beside the hammers, where they were heated before being placed on the dies.

IT SHOULD be noted here that the entire process of the material is made up of a series of successive refinements. To begin with, the alloy steel as it goes to the rolling mills is in the form of ingots—in other words, ordinary castings.

At the rolling mills these ingots are heated and passed between the big rollers which change the ingots into long bars. This refines the grain of the metal by elongating the structure in the same proportion as the ingots themselves are elongated when rolled into bars, bringing the particles of steel closer and closer together and making it more uniform throughout. Thus bar stock to begin with is immensely superior in structure to a simple casting.



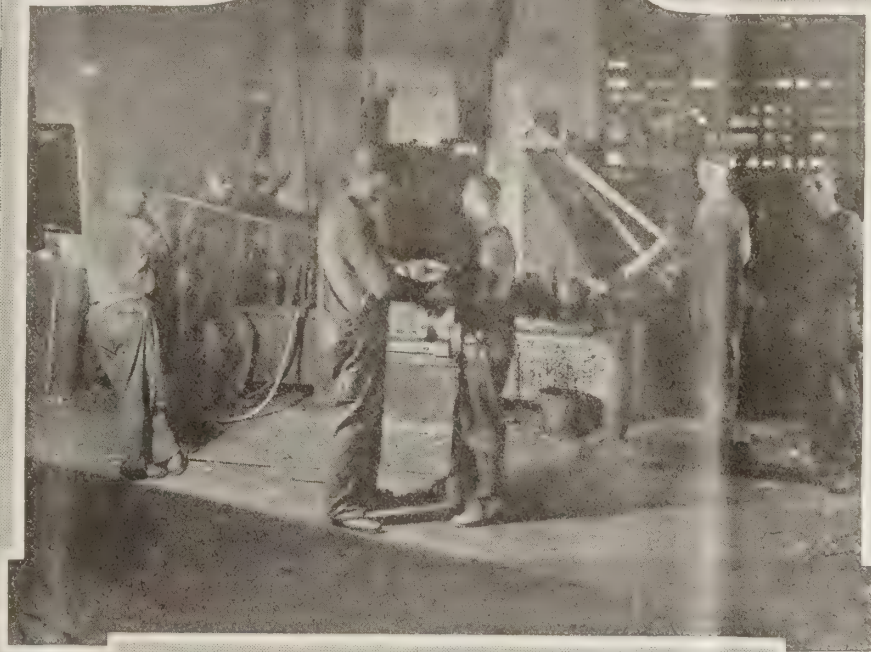
THE Liberty crankshafts were forged on the same hammers as are used for Buick crankshafts—immense steam hammers that can strike a blow of many tons. From the forges the bars were placed directly on the dies, the first blows struck and a still further reformation of the steel structure commenced. At the edges of the dies were the first rough patterns of the shafts, and the hammers coming down upon the yielding metal forced it into the depressions to form the cranks.

The final blows were struck at the center of the die, and as there was an excess of metal in the bar, all that could not be forced into the depressions crept out at the sides and formed what is termed "flash." Special dies were made for trimming off the flash in one operation, and after this was done the shaft was placed on the finishing die, from which it emerged completely forged and ready for machining.

THE heat treating process for each and every part manufactured is prescribed by the engineering department, having in mind the grade of steel employed and the work that the finished part has to do. In the case of the crankshaft, the result sought for is strength and toughness, rather than hardness. So the Liberty crankshaft, after being forged, was carried by electric floor truck to the heat treating ovens and carefully heat treated in ovens controlled by electric pyrometers.

This guaranteed that the temperature, which is the most important element in heat treating, was such as to pass the critical point of the steel throughout the shaft, without carrying it to an excessive point.

From the heat treating department the shafts were taken to the machining departments to be turned and balanced.



Left—Half of the first Liberty crankshaft die and the four men who made it
Right—The first Liberty crankshaft and the crew of men that forged it
Center—Forging the Liberty crankshaft

This brief description of the forging of Liberty crankshafts shows clearly how the long experience of the Buick builders was applied to the manufacture of one of the most important units of the great, big Valve-in-Head motor which furnished the power and speed necessary for operating the various types of light and heavy airplanes.

THERE were two types of Liberty motors, both of which were built at the Buick factory. One was an eight cylinder motor and the other a twelve cylinder motor. The crankshafts in both, however, were similar in shape to the shafts which the Buick Motor Company has been building for many years. For example, the twelve cylinder crankshaft has the same arrangement of the cranks as that used in the Buick six cylinder motor, and it was the experience gained in forging the latter shaft that enabled the Buick forge experts to forge the Liberty shaft in a single trip through the hammers.

Besides the big hammers mentioned as working on the Liberty crankshaft, the drop forge plant contains a number of other forge hammers of various sizes and of two types.

There are 52 hammers in all, capable of working on everything from the biggest forgings used on a motor car down to the smallest. These hammers vary in the strength of the blow struck, from many tons down. Part of the hammers use steam for delivering the blows and the others depend upon gravity. Both types have their peculiar uses and are

necessary to completely equip a drop forge plant.

The forging of the Liberty crankshaft is but evidence of the ease with which the Buick Motor Company's completely equipped plant was turned into the production of war material. The experience of years in manufacturing crankshafts and other intricate drop forgings prepared the Buick organization for forging the Liberty crankshaft. It was only a task of applying the Buick processes to the specifications furnished by the government. The result was a crankshaft of quality that only an organization so completely equipped and thoroughly experienced as the Buick Motor Company could have provided.



A battery of the big steam hammers in the Buick forge plant, the same type as used in forging the Liberty crankshaft



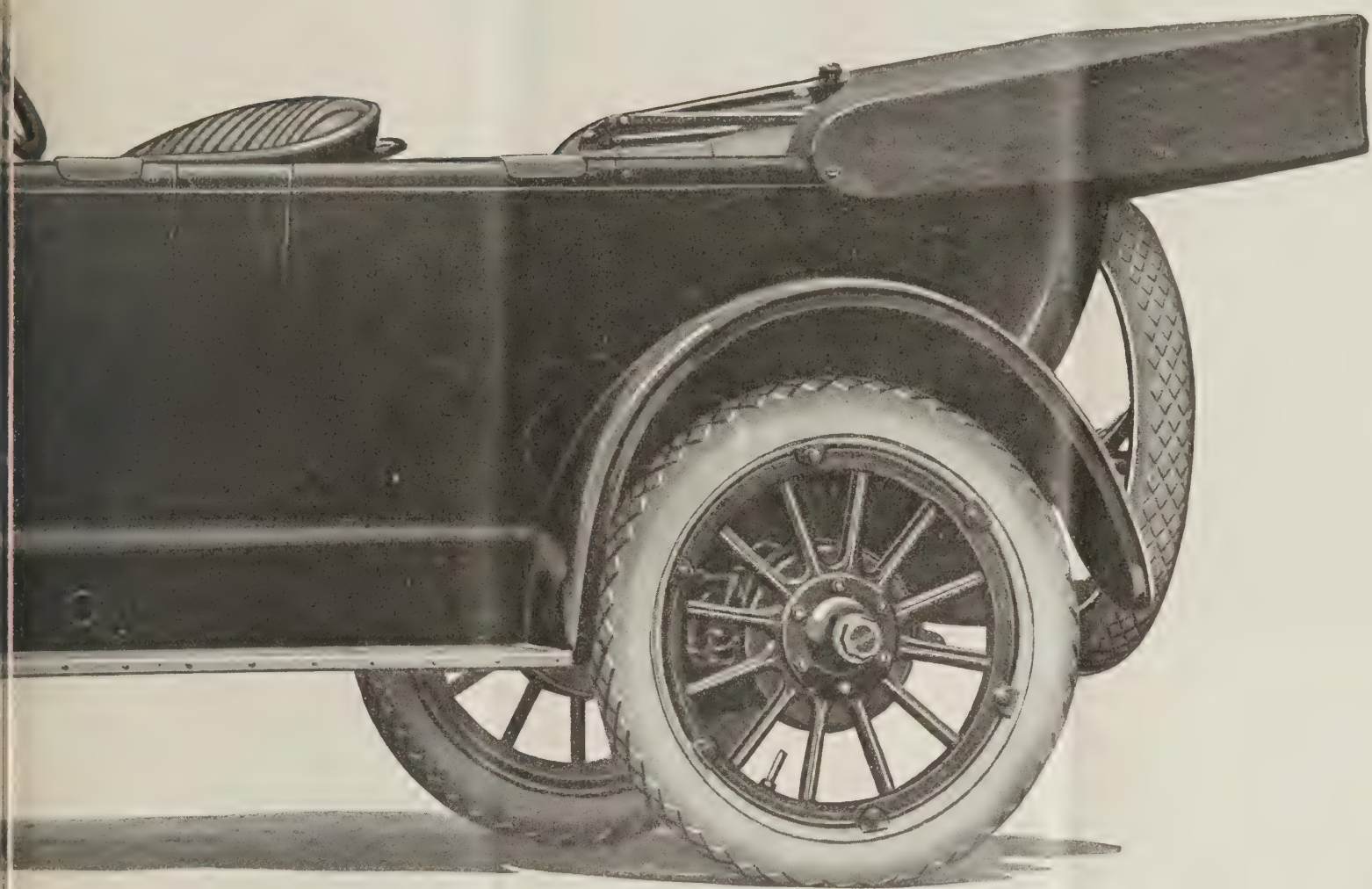
The Buick Five-Passenger

POWER is the keynote of this five-passenger car—unlimited power that is instantly available by simply opening the throttle of the Buick Valve-in-Head motor. And this power means performance, which is the first requisite in a motor car. Without it, the economy, the beauty, the convenience and even the stability for which Buick cars have long been noted would lose much of their attractiveness to the owner.

But in the Buick car plus power such as only a Buick motor can furnish.

You have easy operation—a patented clutch—possible driving convenience.

You have utmost comfort—roominess—fine upholstery—excellent balance.



Open Car, Model H-Six-45

have all these things—
the Buick Valve-in-Head

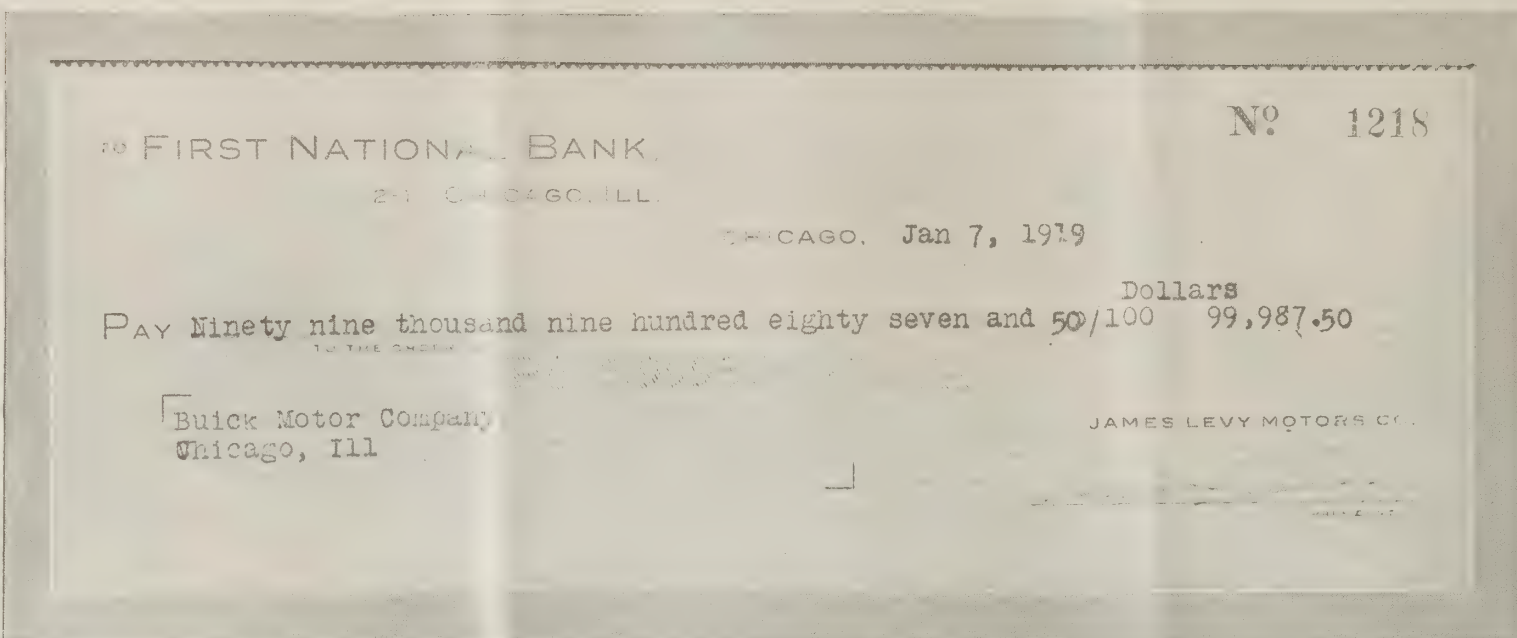
powered by a flexible motor
with steering gear—acces-

for five adult passengers
—cantilever springs—

You have appearance, secured by distinctive
body lines—glossy finish—tasteful trimmings.

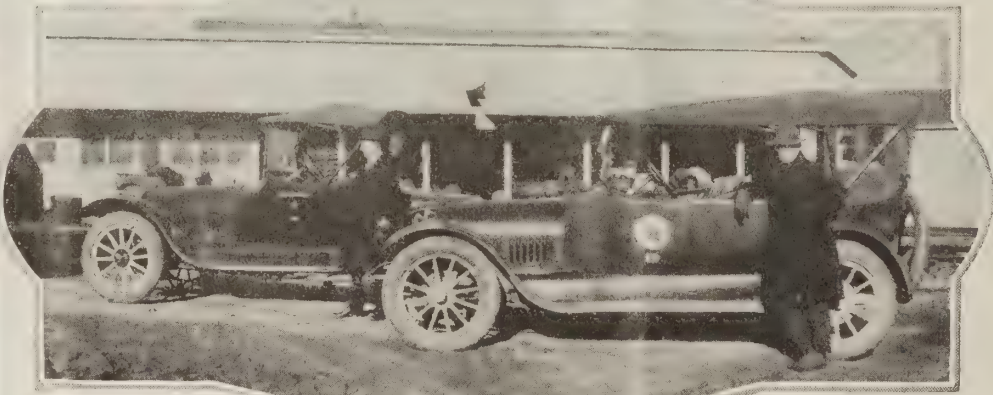
You have durability that does not end with one
or two seasons' driving, but lasts as long as good
materials and careful manufacture can make it.

And still, power is the keynote of the Buick car.
The other features have been developed through
the years around a central point—the Buick Valve-
in-Head principle of motor design.



This check was sent by the James Levy Motors Company, of Chicago, to the Chicago Buick Branch in payment for the January allotment of Buick cars to the Levy company. The significant fact is that the James Levy Motors Company is only one of six Buick dealers in the city of Chicago and conducts a retail business only, with no sub-dealers to absorb any portion of the cars distributed in its territory. In submitting this check, Mr. Levy requested that he be allotted 100 or more cars per month between now and the end of the selling season, as the demand for Buick cars in his section of Chicago was such that it would require at least that number to take care of it.

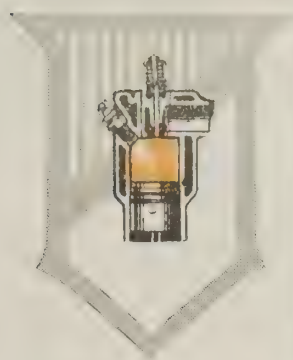
The oil industry is now writing a wonderful chapter in the history of the West, and some of the oil properties there are of such vast extent that the most efficient methods must be employed to develop them properly. More than fifty Buick cars are used by the various officials and supervisors of Cosden & Company, whose refinery at Tulsa is shown in this picture. The big fleet of cars was developed by the process of elimination, various makes of cars being purchased and tried out. Buick cars are now being used because they have stood up so well under the rough service required of them.



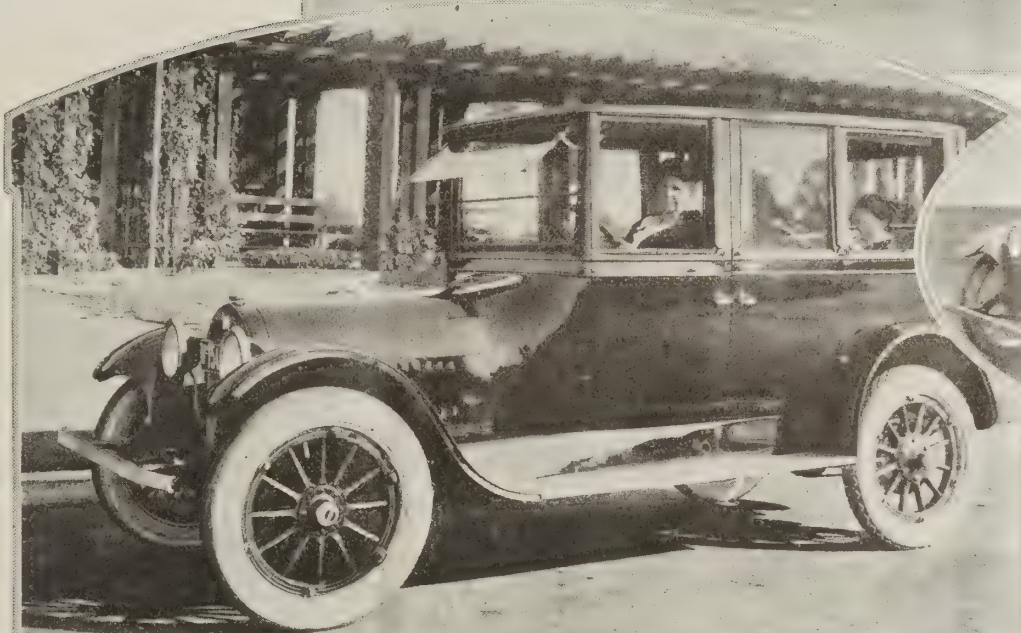
"I consider the Buick the best all around car for general oil field work. We are using over fifty of these cars and they have given us the very best of service." G.V.N. Yates, Supt. Texas Pipe Line Co., Tulsa, Oklahoma



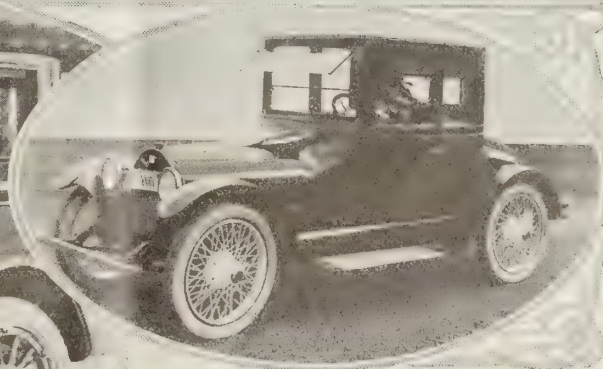
"The Buick is the car to buy when you want satisfaction and good service," is the tribute paid by Mr. T. B. Hardeman, owner of this Model E-Six-49 Buick. Mr. Hardeman is in the grain business in Oklahoma City and uses his car in business every day.



This picture comes from Oklahoma City, and shows Mrs. William Raymond and her two children in their Buick car. Mrs. Raymond says that the Buick fills their every want for general family service



Mrs. Corwin Shank is the wife of a prominent Seattle attorney, and is here shown with her daughter in the family car. Mrs. Shank says she does not know how she would get along without her Buick Sedan, which is used for a variety of purposes, including touring. Mrs. Shank prefers it to an open car for the latter purpose



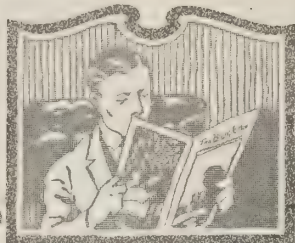
Here is a Buick Coupe that wastes but little time in the garage. It is the property of Dr. James Lagasa, of Tacoma, Washington, who uses it daily in taking care of his large practice. And whenever the doctor is not using the car, you may be sure that his wife is. Mrs. Lagasa is shown at the wheel in this picture, and she vouches for the statement that the Buick Coupe is the ideal car for the small family, particularly where necessity demands daily driving at all seasons of the year



Mrs. Herbert Schoenfeld, of Seattle, says she prefers her Buick Coupe to a chauffeur-driven model, as she keenly enjoys driving her own car. She selected the Buick Coupe for this purpose because of its easy handling and many driving conveniences

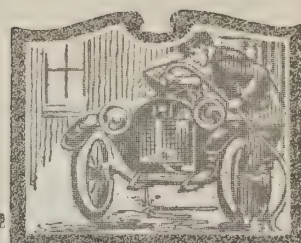


This Buick car has been driven about 13,000 miles, largely in business service, with an upkeep expense that is quite nominal. The car is the property of Mr. W. L. Brown, of Oklahoma City, who is very proud of its excellent record. His enthusiasm is shared by Mrs. Brown, who is standing at the right of the picture



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Cleaning the Cooling System

AFTER driving a car all winter in a climate which makes necessary the use of anti-freeze solution, the cooling system should be cleaned out thoroughly before the warm weather comes on. This is a simple task and in many cases a necessary one, because it seems that no matter what kind of anti-freeze solution is used, a certain amount of sediment is bound to settle in parts of the system or adhere to the cylinder and radiator walls in such a manner as to interfere to a greater or less extent with efficient operation of the cooling system. Add to this the sediment that always results from heating water in any kind of vessel, from a tea-kettle to a steam boiler, and the reason for cleaning the cooling system is quite apparent.

Many methods of cleaning the cooling system have been suggested from time to time by various people, but some of them are question-

able because there is danger of injuring the radiator on account of the caustic chemicals used. The following method can be recommended as being absolutely safe and at the same time will give the cooling system a thorough flushing that will remove practically all loose foreign matter.

First, drain the system by means of the pet-cock in the bottom of the radiator. Then turn a hose in the filler cap of the radiator to admit a moderate stream of water. Next start the motor and let it idle at a fairly good rate of speed, leaving the pet cock in the bottom of the radiator open all the time. This will not only flush out the water jackets and the radiator, but because of the fact that the motor is running the water pump will be kept in action and will send a good stream of water all through the system, flushing it out thoroughly.

After this is done, examine the hose connections from the cylinders to the radiator, to see

that they are in good condition. It sometimes happens that anti-freeze solution will have a bad effect on the inside of the hose, while from the outside it will be apparently as good as ever. A fairly reliable test is to press the hose firmly between the fingers. If it seems good and firm it is probably in good condition. If it is weak and flabby it may be sucked together from the force of the water pressure and either partially or completely cut off the circulation of the water.

Some drivers seem to think that simple anti-freeze solutions made from water and alcohol do not need to be removed, assuming that the alcohol will evaporate in time and the addition of water will be sufficient. This is not true, because while the alcohol will evaporate, the sediment will remain. As a matter of fact, the cooling system should be flushed out once or twice a season, whether anti-freeze solution is used or not.

GOOD WORDS FOR THE BUICK FROM FAR AND NEAR

At Last, a Complaint

MR. E. P. MILLS, Editor of The Angelica Advocate, of Angelica, N. Y., has a complaint to register against the Buick.

"In January, 1916," Mr. Mills writes, "your dealer induced me to purchase a D-6-45 Buick. I considered the matter six hours. I took the agent's word that the car would be all right. The Buick was delivered in February and since then I have driven it 7,300 miles.

"I have had to buy oil and gasoline, of course. I expected that, but I have had to purchase other things; for instance, two balls for front wheel hub, one bulb for the dash light, and one bulb for the headlight.

"Now, I shall soon be obliged to buy a tire or two. I have two spares to replace the tires that came with the Buick should they prove defective.

"Your dealers told me that my Buick would make good mileage. I am unable to do better than the following:

"First year, 3,300 miles on 165 gallons. This included my learning activities.

"Second year, 2,400 miles on 114 gallons.

"Third year, 1,600 miles on 76 gallons of gasoline. During this period I have used a five-pound pail of cup grease, fifteen gallons of motor oil and two gallons of steam cylinder oil.

"You can see from the above that I was taken in by the Buick dealers. The other day I was told that I ought to have the engine gone over, but she runs all right, still and steady.

"And the other day a friend of mine bet me a dollar that my car had been newly finished. I won the dollar, because I had only just washed it. If you have a car that is as good as mine, I am ready to trade, but it must be just as good."

Too Speedy to Overtake

THERE is one case on record where a Buick possessed too much speed for the welfare of its owner.

While calling on a patient one night, Dr. A. L. Blecker, of Memphis, Tenn., left his Buick at the curb. When he came out it was gone. A friend offered to help the doctor by taking him on the rest of his calls.

At one of the crossings, a Buick drew up alongside of Dr. Blecker and his friend.

"My car," gasped the doctor. The chase started.

The streets were slippery, but the driver of the Buick minded it not. The pursuit weaved in and around streets, and in a burst of speed the Buick vanished.

If Dr. Blecker had not cared for speed, flexibility and power in an automobile, he might not have lost his car.

Utility on the Farm

MR. EMIL LARSON, of Commonwealth, Wisconsin, is the owner of a Buick Model D-Six-45, and writes as follows regarding the utility of his car:

"I am a farmer living eight miles from town, and every time I must drive to town with a horse it means a loss in dollars and cents. The more effective work a farmer does the better off Uncle Sam is right now, and that is why I want this automobile."

"Dependable," Says Buyer of 17 Buicks

I CONSIDER the Buick the superior of any other car of the American market today—bar none—absolutely dependable under all conditions," says Mr. Claude Parks, of Chestertown, Md. In support of this conclusion, Mr. Parks refers to his experience with Buicks since 1909.

"My first Buick was purchased in October, 1909—the little Model 10. The last nine years have seen me the purchaser of two new cars each season. My total of Buicks is exactly seventeen.

"I expect, barring accidents and ill health, to buy two more Buicks each year that I live. They are absolutely and positively dependable."

THE ABSENTEE

Continued from page four

will lose the greater part of his heritage; so that you see I am bound in honor to—to—"

"Sacrifice yourself," I added, and her head drooped silently.

"After all, perhaps it is as well that you should," I continued, with my eyes upon the sweep of her neck, milk-white beneath her raven hair.

"What do you mean?" she asked.

"Well, you see, as it happens—I am the Earl of Keith!"

"You!" exclaimed Moira.

"Exactly," I answered.

"But—I thought—you told me you were Martin Armstrong!"

"So I am—Martin Armstrong Rathbone, Earl of Keith. It was your grandfather's idea that I should come to Dunleary—and by Gad, Moira, it all seems too good to be true, you know!"

"Yes," she answered, "like a page out of a story-book."

"When will you sacrifice yourself to the Earl of Keith, Moira?" I asked at length.

"Whenever Martin Armstrong wishes," she said.

Finds Buick in France

THAT French owners are just as proud of their Buicks as the owners in this country is shown in an interesting letter from Sergeant Owen Grills, with the American forces in Blois, France.

"In taking the liberty to write you," says Sergeant Grills, "I feel as though I were writing to some of my personal friends. I have driven Buicks ranging from the old Model 10 to the latest out up to the time I left, and I know that no one can do that without feeling as I do.

"And I want to tell you right now that the little 6-45 is far ahead of anything within five hundred or a thousand dollars of the Buick price. I am not writing you with a month's experience back of me, but with seven years' work with every American make of automobile on the market. Since I have been here I have had quite a little work with European makes.

"But, the real reason for this letter was to tell you of a happy little surprise today. I started down town and as I passed the market I heard an engine running with a cut-out open. I said to the corporal with me, 'Say, that sounds like a Buick to me.'

"On going around where it was, there stood a little Model 25 and on examination it proved to be a 1912 model. To say I was surprised wouldn't express it at all.

"So I played on the Klaxon until the Frenchman who owned the Buick showed up. After jabbering with him, I found out that he had had the car about two years and that repairs had only cost him twenty francs or about four dollars in real money. He said he wouldn't sell the Buick for the original price.

"He expressed himself as being very proud of his Bu-eck, as he called it, and said that he was going to get one of the sixes as soon as possible."

9,000 Miles on Same Tires

I DON'T think many Buick owners have much on me," writes Mr. F. S. Bryant, of Watertown, N. Y. "I purchased my light six in July, 1916, and have driven it 9,000 miles on the same tires and spark plugs that came with the car.

"I am getting eighteen to twenty miles on a gallon of gasoline on good roads. My repair bill has been very light.

"On one trip from Watertown to Rome and Utica and return, we covered 205 miles on ten gallons of gasoline. I am a locomotive engineer and not being home a great deal, my son or daughter drives the car as easily and as well as I can. I will always have a good word to say for the Buick."



Radiation and the Fuel Question

RADIATION, as applied to internal combustion engines, is casting off the surplus heat, over and above that required to operate the engine at the right temperature to insure good results. Naturally, it varies with the design of the engine.

The automobile radiator differs from the ordinary hot water radiator in that it is used to keep the temperature of the motor down to a safe point, while the heating radiator emits heat for the purpose of warming the air in a room. The action of both types of radiators on the source of heat, however, is almost identical.

The temperature of the water in a heating radiator represents a certain amount of fuel. So does the temperature of the water in an automobile radiator.

The greater the volume of water in the heating system in your home—including the pipes and radiators—the greater the amount of fuel required to keep that water at a certain temperature. The very same thing is true of the cooling system of an automobile engine.

The heat in the water of either type of radiator is conducted by the metal walls of the radiator to the outside, where it is absorbed by the air. And every single heat unit that thus escapes is equivalent to a definite amount of fuel, for the simple reason that the heat is generated by the combustion of the fuel.

For this reason, the volume of water in the cooling system of an engine is quite a serious problem, because it is so intimately connected with the matter of fuel consumption.

Now, the water jacketed space in an engine corresponds to the boiler and flues of a hot water heating plant. It conducts the heat from the source of heat through the metal walls and into the water, and the heated water rises to the top of the radiator, is cooled and circulates back to the water jackets again in obedience to natural laws. The bigger the boiler, the more fuel required; the bigger the water jacketed

space on an engine, the more heat units lost from this source.

In discussing internal combustion motors, it is first necessary to get one fact firmly fixed in mind, namely—that they are all heat engines. In other words, they derive their power by converting the fuel used in operating them into heat, and it is the expansion of the heated gases resulting from each explosion in the cylinders that supplies the impulses necessary to run the motors.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be.

In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water jacketed space there is in a motor, the greater the thermal (heat) efficiency will be, because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases, both inlet and

exhaust valves form a part of the combustion chamber, where the heat is greatest, and in consequence it is necessary to water jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. This pocket is water jacketed.

In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water jacketed, it follows that the Valve-in-Head type affords the minimum of water jacketed space that is possible to be secured for any given size of cylinder.

Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the large valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is much more perfect in the Buick motor because the incoming charges are purer.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other types of motors, a quicker ignition of the charge and a smaller loss of heat through the water jackets. The sum of these advantages is more power with less gasoline consumption.

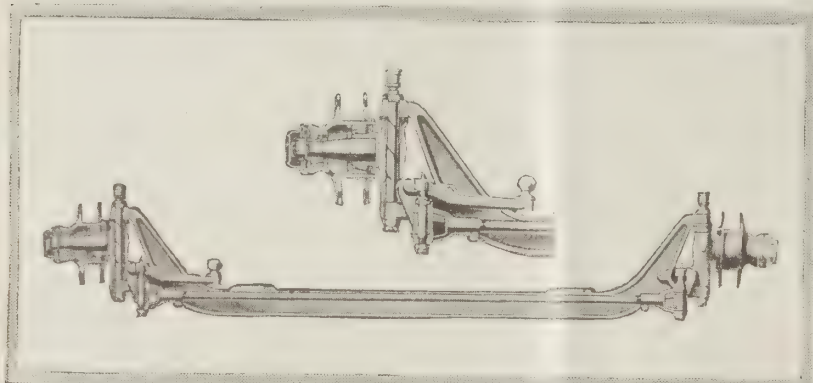
Buick Cars—Buick Designed—Buick Built

A MOTOR car is a collection of intricate mechanical units, each with a distinct relation to the others and working in harmony with them. The finished car must of necessity be judged by the manner in which these mechanical units are co-ordinated and balanced to make up a well engineered car.

One would hardly be justified in purchasing a car solely on the strength of one or even several of these features. It is only when the correct relation between power and load, comfort and safety, performance and durability, is preserved that we can find true motor car efficiency. And this result can only be obtained after years of scientific study backed by broad experience of the most practical nature.

The Buick chassis has been developed as a perfectly consistent whole. While great emphasis is laid upon the correct design and manufacture of every part, it should also be added that only in conjunction with the rest of the parts as presented in the Buick car do they reach their highest state of efficiency.

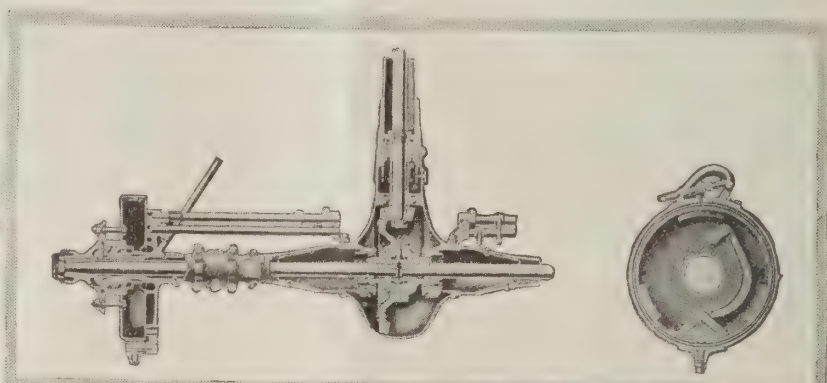
The thorough consistency of the Buick car is reflected in its performance, primarily, and is brought home with ever-increasing emphasis the longer the car is run. It is this balance and proportion, resulting from nearly twenty years spent in co-ordinating the parts of the Buick car, that make the Buick so serviceable and economical in every-day service.



THIS is the strongest type of front axle that has yet been devised, and owing to the way it is shaped it represents the lowest point in the road clearance of the Buick car.

It is practically impossible to break a Buick front axle. Samples are taken from each lot of axles manufactured and placed on great machines that twist and subject them to a downward pressure many times greater than could possibly be placed on them in service.

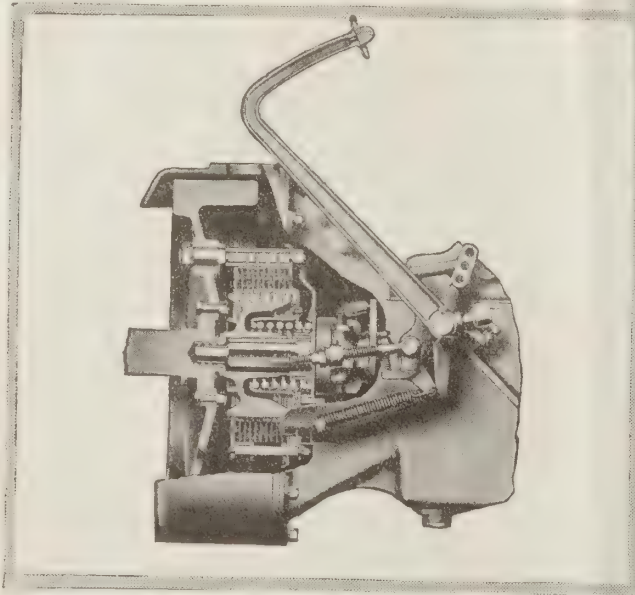
All raw material is carefully analyzed in the chemical laboratory before it is permitted to be put in the stock bins at the factory.



THE differentials in Buick rear axles are made with particular reference to strength and quiet operation. The driving pinion and the large master gear are of the spiral bevel type, and the whole differential is mounted on a strong carrier firmly secured to the housing.

The drive shafts are of special alloy steel, and the housing is made of pressed steel with detachable covers.

Powerful, easy acting brakes operate on large steel brake drums very securely bolted to both rear wheels.



THE clutch is formed by alternate discs, connected with the flywheel and the transmission respectively, the faces of the discs being covered with the finest quality of asbestos material.

The only lubrication required by the Buick clutch is provided by two grease cups, which are located in a convenient place so they may be turned down occasionally as required.

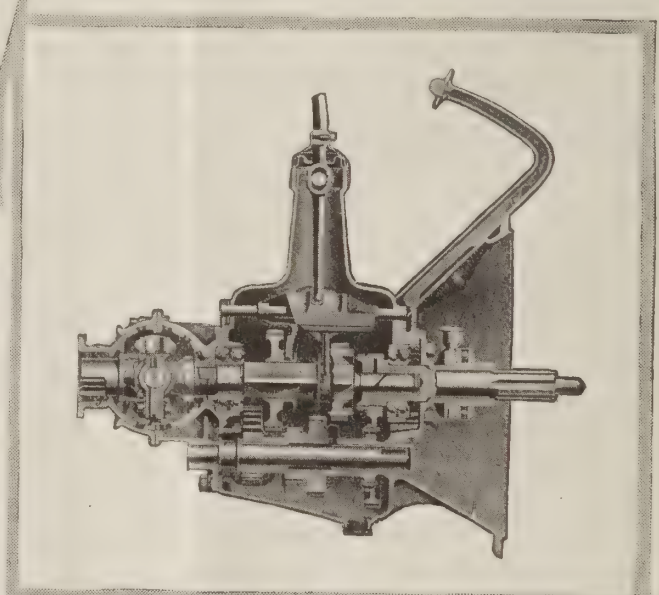
The slightest pressure of the foot will disengage this smooth acting Buick clutch, which makes it especially popular with women drivers and those who drive much in congested traffic.



THE Buick steering gear is of the semi-irreversible type.

The steering gear housing is big and strong. The steering wheel is of large diameter. The drop forged steering connections are carefully manufactured.

As a result of this design, the factor of safety in Buick steering gears is very high. And because of the leverage provided by the large steering wheel, anti-friction bearings and the positive lubrication of every part, the car may be operated for many hours at a time without fatigue to the driver.



NEXT to design, the two principal factors governing the quality and durability of a transmission are the accuracy of the machining operations and the heat treatment of the gears.

Buick gears are cut from drop forged blanks on wonderful automatic machines, the countershafts and main shafts are ground to exact sizes to fit the gears and bearings, and the gears heat treated so that the wearing surfaces of the teeth are hard to resist wear while the inner portions are made tough to withstand sudden strains and hard pulls without breaking.



When Better Automobiles are built—Buick will build them

Buick
 EVERYBODY KNOWS
 VALVE-IN-HEAD MEANS BUICK



Buick Cars and Modern Homes

BUICK Valve-in-Head Motor Cars have come to be a necessary part of the equipment of the modern household. Like the many appliances that contribute to efficient and economical housekeeping, the Buick car, as a conserver of time as well as a promoter of social intercourse, is indispensable.

*Buick Motor Company
 Flint, Michigan*

*Pioneer Builders of Valve-in-Head Motor Cars
 Branches in all Principal Cities
 Dealers Everywhere*

Many hours of service are added to each day and many years of health, happiness and ripe friendships are added to the lives of those who number a Buick car among their possessions.



A Buick Valve-in-Head Motor

is available only in a Buick car. But with the range in selection afforded by six useful body types, it is possible not only to have a Buick Valve-in-Head motor but to have it in a car that is in all other respects perfectly suited to one's individual requirements.

There are three open models—capacity, three,

five and seven passengers, respectively. There are also three closed models, for four, five and seven passengers.

Each of these models is powered with the famous Buick Valve-in-Head motor, which has been synonymous with power, stability and economy during practically the whole history of the motor car industry.

Three-Passenger Open Model H-Six-44	.	.	.	\$1495
Five-Passenger Open Model H-Six-45	.	.	.	1495
Four-Passenger Closed Model H-Six-46	.	.	.	1985
Five-Passenger Closed Model H-Six-47	.	.	.	2195
Seven-Passenger Open Model H-Six-49	.	.	.	1785
Seven-Passenger Closed Model H-Six-50	.	.	.	2585

f. o. b. factory

Buick Motor Company, Flint, Michigan

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities :: Dealers Everywhere

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THE *Buick* BULLETIN

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APRIL 1919

FIVE CENTS A COPY



In this number—Good Roads and their Value—Page 5



Wind, Moon and Tides

*Look when the clouds are blowing
And all the winds are free,
In fury of their going
They fall upon the sea.*

*But though the blast is frantic
And though the tempest raves,
The deep immense Atlantic
Is still beneath the waves.*

—Frederick William Henry Myers

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Flint, Michigan, U. S. A.

Number Four

The Happily Married Holdens

MR. AND MRS. HOLDEN were happily married. They had successfully accomplished six years of wedded life, and so had given up trying to "mould" each other and had achieved a fine discernment of occasions when it was wisdom to give up and give in. McElroy Holden was moderately successful in business, and Louise, the wife, was moderately successful in pleasure, which was as it should be in a modernly appointed little home in a suburban little town made for domestic serenity.

Louise had generalship, and so was President of the Woman's Club and things like that, and Holden commuted.

Louise was pretty, with that blond fatuity that so often marks the capable housewife, and she adored every detail of her home-making. Louise's own mother was something like Sheridan, only twenty miles away, and this made it possible for her to visit her daughter early and often. Holden was awfully decent about it, but all the same, he didn't hang out his banners on the outer wall when he heard of his mother-in-law's impending presences. However, Mrs. Baxter was by no means a bone of contention between them and the good lady's well-meant advice was always politely received.

It was on a heavenly afternoon in May that Mrs. Holden was dressing to go to a committee meeting of the Lady Citizens' Club, of which she was chairman. An exquisite new frock lay on the bed ready for her adorning. It was a lovely thing and its pleased possessor looked at it with shining eyes. As she approached the new creation, Helga, the neat-handed, heavy-footed maid, came in bringing a letter, fresh from the postman's bag.

"From mother!" exclaimed Louise, and her half unconscious sigh was not so much unfilial as marital. She loved her mother, but she also loved McElroy, and she could at any time be happy with either, were t'other dear charmer away. Opening it, she read that her mother wanted to consult her about a new gown for cousin Lily's wedding, and should she come there or would Louise come to her?

In three minutes she was at the telephone talking to her husband.

"Sure, Lulie," he remarked heartily; "go

By CAROLYN WELLS

Illustrated by A. W. Grann

ahead. I hate to have you away over night, but honest to doughnuts, it beats three days invasion by the Dowager Duchess."

"Then I'll go, Mac; and Helga will give you

"Can it, Lulie! Never set up a straw man over the telephone. You're going. You're going, and I'll live through it. Now scatter, I'm some busy. Good-by, little one, have a good time. Goo' by."

"Good-by, dear," and Louise hung up the receiver, at the same time looking at the clock and reaching for a time table.

She put away the delectable white frock, substituting a trim traveling garb, telephoned her excuses to the second Lady Citizen of Riverville, and then turned her wifely attention to McElroy's comfort. She turned down his twin bed, giving affectionately effective pats to the pillows, adjusted the reading lights, and put two new magazines on the night table.

"No," she thought, "he won't want but one; I'll take the other myself, to read on the train, then I can give it to mother."

Prettily ready, she picked up gloves and bag, and ran downstairs.

"Have Mr. Holden's dinner ready at seven," she told Helga; "and make a grapefruit salad for him." Then, remembering she had promised something specially good, she added, "have hot apple pie with ice cream. You can order a pint from the caterer's."

It was nearly an hour's ride to her mother's home in East Dayton. Mrs. Holden selected her seat in the train, settled her unruffled plumage, looked in her bag for her safely tucked-away ticket, gave an admonitory touch to her perfectly placed barrette and opened her magazine.

"Well," she said to herself, as she finished it, "I am glad I didn't leave that for Magsie to read!"

It was a story of a young couple, who, after six years of married happiness, had become bored and weary of each other. Not a novel

theme for magazine authors, but its implication was that after such a time the most devoted husband must inevitably weary of his wife and turn aside to a different, if a lesser, feminine interest.

"Rubbish!" Mrs. Holden blithely observed to herself. As for Magsie's ever so much as looking at any other woman, the idea was so laughable that it made something choke in her throat. However, she was glad she had brought that wretched magazine away with her and she was morally certain she would not take it



Her eyes dilated as she picked up a silver vanity case!

your dinner—it's a specially good one tonight. What time will you be home?"

"Bout six-thirty; hang it all, Lulie, I hate to have you go away! Tell the mater-in-law I shan't let you go very soon again!"

"But it doesn't happen very often, Mac, and if she comes here, we can't go to the Fessenden's tomorrow night."

"That's so. Well, trot along, honey-bunch, and I'll pull through somehow. Goo' by."

"But, Mac—wait a minute! I hate to off and leave you to an evening alone—"

back home. It was at dinner at her mother's that her brother Martin said, casually, "Who's Mac's siren friend, Louise?"

"Siren what?" she shot back, with more energy than she realized.

"Oh, a dark-eyed beauty was with him in the train tonight; she was of the sophisticated ingenue type, and Mac didn't seem to mind it a little bit."

"Who was she?" Louise entirely overdid her indifferent air.

"That's what I'm a-askin' of. Young thing, not much more'n a flapper, but having mastered the art of how to be entertaining in polite society, she had old Mac sitting up and taking fifty-seven varieties of notice."

"It doesn't matter; he's old enough to look out for himself."

The subject changed, and Louise adequately carried on her part of the family table conversation, while her brain was working out, in an under-current, a plan to get home. Not that she suspected McElroy of anything whatsoever in the whole world—but she had a sudden longing to take care of him. The woman in that rubbishy magazine story had thoughtlessly relaxed her hold on her husband, and he had slid away from her like a launched ship from its stays. McElroy wasn't that sort, but all the same she, as a dutiful wife, was determined to go home on that evening instead of remaining over night. Her excuses were lame, but they served to get her away from her mother's house, and her brother took her to the nine o'clock train.

"Good-by, girl, take care of yourself," and Baxter swung off the step as the train started.

After preliminary flutterings, Louise settled herself to think, and she thought through successive stages of surprise, regret, amusement, indignation and thankfulness, and reached the height of the last and the station of Riverville at the same time.

A cabman touched his hat pleasantly and put her into his waiting vehicle. It was but a few blocks' ride and with every block she was more and more glad she had come home.

As she neared the house, she saw a light in the parlor window.

"Some one must have called," she thought, wondering who could have come formal enough to be taken in there.

A thought of the "siren" Martin had spoken of did flash through her mind, but so quickly as to leave no trace on her conscious curiosity.

And then, as the cab drove up to the curb and stopped, the parlor light disappeared, and in an instant, the library light flashed up.

Bewildered, Louise dismissed the cabman, and walked slowly along the short way to the house. As she reached the steps, the door opened and her husband said, "Why, you blessed child! This is an angel's visit!"

He kissed her, with what seemed to Louise suspicious enthusiasm, and led her indoors.

"Tell me all about it," he went on, very blithely; "wasn't mother home? Why didn't you stay over night?"

"Did you want me to?" and Louise blue-eyed him sternly.

"Lord, no! I never was so glad to see anybody in my life! Want some supper?"

"No, thank you. Where are you sitting?"

"Here in the library. Come on in. I was just thinking about going upstairs. Do let's have something to eat. We ought to celebrate this unexpected reunion."

"All right," and Louise turned toward the dining room. She was dazed. So much so, that she realized she must keep a firm hold on herself or go to pieces. Mac had lied to her! He had *not* been sitting in the library, but in the parlor; and he had switched off the parlor

light and turned on the library light when he heard her cab stop at the curb! Also, and worse, the parlor door was closed!

Her head was spinning, her world was tottering, and Louise made such a desperate effort to keep herself well in hand that she rather overdid it.

"Yes, they were all home," she said, laughing a little too gaily, "but I felt you wanted me—

sort of telepathy, you know."

"And right you were!" and McElroy, also, was a bit hyperhilarious; "I was frightfully



Noiselessly he put on bathrobe and slippers, and then, as silently as she had done, he went downstairs

lonesome for my little girl, and I was just hoping you'd—" he paused so long that Louise said, "well, hoping I'd what?"

"Oh, yes—er—what was I saying? Wait a minute, is someone at the front door?"

Holden left the room, and she heard him fumble with the chain on the street door, and after a moment or two he returned.

"All serene; oh, yes, I was saying, I hoped you'd never go away again."

"Did you?" and Louise smiled at him queerly; "well, I don't believe I ever will."

Their talk was much as usual, but a little hectic and rapid, and at last Louise started up, saying she was tired and should go straight to bed. "I'll just look in the parlor to see that the windows are closed," she added. "It may rain."

"They're all right, Lulie; I attended to them early in the evening. It did look like a shower."

"Very well; I'll just look in to see that the lights are off—"

"They're all off, dear; why should they have been on?"

Why, indeed! except that Louise knew they had been on. However, she couldn't insist further on going into the unused room, so she went upstairs feeling as if the end of the world had come and she didn't quite know what to say to it.

Their chat was pleasantly commonplace as they prepared for bed, but when Louise, seated at her dressing table, saw McElroy's mirrored back vanish through the bathroom door, she silently rose and swiftly slipped downstairs. She knew the parlor door did not creak and she must know what or who Mac had hidden in there.

But the parlor door was locked and the key gone. Locked! Her own parlor door! Had he locked it when he pretended he went to the street door? It was so incredible that she flew straight back upstairs and resumed her place at her mirror, and when her husband emerged from his bath, she was still brushing the long blond hair that framed a white, scared face.

"Mermaid!" said McElroy, gaily, dropping a kiss on her forehead.

Louise forced a smile. "You haven't called me that for years! Why tonight?"

"Nonsense! you always look like a mermaid when you comb that long gold hair. It was *that* that first ensnared yours truly."

"And you are still ensnared?"

"You bet I am!" Holden's words were all right, but his tone was over-emphatic and—the parlor door was locked!

Louise couldn't get to sleep that night. She lay staring into darkness, her brain rioting with fears, both vague and definite. Had Mac brought home a dark-eyed siren? Had he locked her in the parlor? It was so unthinkable that it almost made her laugh, but she knew she mustn't laugh or she'd have hysterics. She lay rigidly immovable, almost too stunned to breathe. Out of the tail of her eye she glanced across at the other bed, and could just discern the long blanketed hillock that was Mac. So still was the hillock that she was sure he was awake. An inspiration came to her. She relaxed, and nestling a little she yawned, moved slightly, and then began breathing long, deeper breaths of sleep. Gradually this breathing became faintly audible, and at last from under her dropped eyelashes, she could distinguish a slight movement on the part of the hillock. Her apparent sleep continued, and after a moment she saw a black shadow, as Holden sat up and then stealthily rose from his bed. Noiselessly he put on bathrobe and slippers, and then, as silently as she had done, he went downstairs.

Open-eyed, Louise listened. She distinctly heard him unlock the parlor door and step into the room. Then she heard him raise the big side window that opened on the veranda. Her heart stood still—was he letting the Siren out?

McElroy Holden! her husband! mixed up in a common affair like that! Never would she believe it. She would wait till morning and then make him explain what must—simply must—have a rational explanation!

It was a quarter of an hour or more before Holden came upstairs, as slowly and stealthily as he had gone down. Louise "slept" dramatically, and didn't move, though Holden came to her side and peered down in the darkness to see if she were awake. Then he returned to his bed, and silence reigned.

Another hour went by, and Louise, now on edge with hysterical excitement, knew from Holden's breathing that he was really asleep.

Whatever or whoever had been in the parlor was not there now; and Holden, his mind at rest, was sleeping quietly as a tired child.

Knowing the depth of his customary slumber, Louise fearlessly rose, and quietly donned kimono and slippers and went down stairs. The parlor door was open now, and she went in. The shades were drawn, and she switched on the electric light. All was as usual, as far as she could see. The filmy lace curtains gleamed white at her; the blue satin upholstery shone pleasantly.

With Sherlockian astuteness, Louise examined the window that she had unmistakably heard Holden raise. It was duly fastened, and gave no hint of anything untoward. But why would he have raised that window, save to give somebody exit? Sighing, she touched the key to switch off the table lamp she had lighted, when on the table she saw a strange thing.

Her eyes dilated as she picked up a silver vanity case! It was a very pretty one, of rich and delicate workmanship, but Louise touched it much as she would a live coal.

With horror-stricken expression, but urged by an irresistible impulse, she opened it. It contained the usual mirror, powder box and puff, and the foolish paraphernalia loved of silly women. Louise had always half wanted one herself, but she knew Holden thought them foolish, and so had never insisted. And now, the Siren had brought one here, and had left it—had had the colossal nerve to leave it. Now that the actual previous presence of the Siren was no longer possible to doubt, Louise's petrified mind blindly reached out to trivial details of her visit.

[Continued on page 12]

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

GOOD roads have always been regarded as a mark of civilization, because they are essential to some of the simplest and most elemental things that civilized people do. If a man wants to build a house he must have some reasonably good means of getting the material to the spot. And if another man wishes to take some of his produce to market, he cannot very well haul it over rough and unimproved country.

All this brings up a point in connection with good roads; namely, that they are essential to everybody. They are not merely for the man with the motor car. They are for facilitating intercourse between the people in the country and the people in towns and cities, and between the people in one community and another. No other means of communication can take their place.

UNDoubtedly, the motor car was responsible for the great stimulus given to the good roads movement during the past few years. For it is literally true that the motor car was the first great improvement in individual transportation since the day, centuries ago, when the first wheeled vehicle was harnessed to a horse to take its owner from his own doorstep to his destination.

The steamboat, the railroad train and the street car are all public utilities. The motor car is for the individual and his family.

The motor car is, primarily, a time-saving device. It answers the same purpose in the life of its owner, in his daily occupation, that the public utilities fulfill for the communities and country at large.

Quite naturally, the owners of motor cars are the most progressive people in the country, taken as a whole. They place a higher value on their time than people who are satisfied with other methods of travel, as they are not content to take an hour for a trip that can be made in a few minutes, nor the better part of a day for a run that the motor car will negotiate in an hour.

Naturally, they take the greatest interest in good roads.

The early motorists soon found that with comparatively few exceptions, the country roads left much to be desired. They were filled with ruts and bumps and holes, and frequently a heavy rainstorm was all that was neces-

sary to transform many of them into endless muddy canals.

No vehicle can travel to advantage over roads of this character. They even rob the horsedrawn vehicle of what little speed it is capable of, and motor propelled vehicles of every description must travel them at a small fraction of their logical pace.

THE whole proposition is that poor roads are a handicap to everybody. Good roads are a distinct benefit to the country at large. Even considered solely from the standpoint of reduction in the cost of haulage, they actually save money for all classes of people the country over, no matter whether those people are producers or consumers.

The motorist is interested in good roads, not because his car cannot traverse the bad ones, but because good roads mean an actual saving in time and money for him. There are many thousands of Buick cars owned in communities where poor roads are the rule, and it is mainly in this rough service during almost twenty years that the Buick Valve-in-Head motor has earned its reputation for power and stability.

But no matter how strongly a car may be constructed, nor how rugged it may be in every part, there is certainly nothing to be gained by keeping it working at top notch tension all the time. A man would never think of making a team of horses exert themselves to the utmost, pulling the heaviest load they could handle, all day long. He knows that an occasional heavy pull will not harm the horses, but that a strain too long continued is harmful. So with a motor car.

A motor car traveling on good roads has everything in its favor. It will give greater gasoline mileage—greater tire mileage—greater mileage on lubricating oil—longer life for all parts of the machine—greater comfort to the occupants—more speed of travel with a consequent saving in time.

IN consequence, the average motorist pays his good roads tax more cheerfully than any other tax for which he is assessed. Every dollar contributed by a motorist for the building of good roads will save him at least five dollars in service charges and the saving in his time is also a valuable consideration.

The chief thing to remember about a good roads tax or contribution is that you should not worry about where that money is to be spent—in other words, the section of the county or state where the roads are to be built.

It is quite out of the question to build new roads everywhere in the same year. As previously stated, good roads are an asset to everybody. They are public property in every sense and for the benefit of the general public. The road tax must necessarily be distributed where roads are most needed, and where those roads will do the greatest good to the greatest number. The matter of building roads cannot be handled like the paving in a city, for example, by taxing only the property owners past whose property the roads run. For in this case the expense to the individual property owner would be too great and a big percentage of the people who would largely benefit from these roads would not be taxed for them in any way.

SOME states in the country have been much more progressive in the matter of good roads than others. This is in most cases due to local conditions. However, the good roads movement is gaining in momentum every day and has made tremendous strides in the past few years. And it is a mark of progress—a movement that deserves the active support of every class of people and every type of business.

More especially does it deserve the support of motorists, because it appeals to them from so many different angles. They have been quick to see the advantage of a newer and better means of individual transportation. They should be equally quick to aid in every possible way in a movement that will insure that they get the utmost benefit from that means of transportation.

This means good roads. Several great national highways are now in the process of construction, and while they are not entirely completed, enough progress has been made to show that they will be of immense benefit. It is quite as important that these big highways should be connected by a network of really good roads, and that other sections of the country not tapped by the national highways should have good state and county roads, in order to facilitate the transportation of numberless kinds of materials as well as many thousands of people every year.



The Liberty Motor Crankcase

LIGHTNESS was one of the prime essentials considered in designing the Liberty motor, and it was most admirably worked out by the men to whom the task was entrusted. And this lightness, coupled with the Valve-in-Head principle of design, made the Liberty motor when finished the most powerful airplane motor in relation to its weight that the world had ever seen.

One of the triumphs of the motor car industry is the manner in which motor car designers have delved into the complexities of metallurgy and selected those materials for various parts that combined the attributes of lightness and strength.

This rule was followed in the Liberty motor, and the crankcase was one of the parts where the designers profited by this metallurgical research work.

First of all, a crankcase must be strong. It is the foundation on which the cylinders are anchored, and as it also supports the crankshaft it receives the force of every push of the pistons. A perfectly satisfactory crankcase, as far as strength is concerned, may be made of cast iron or steel. But for motor car or airplane purposes, the weight of such a crankcase is excessive, although cast iron crankcases are by no means uncommon on motor cars.

YEARs ago, Buick engineers and other designers turned to aluminum, but it was found that aluminum alone did not possess sufficient strength, although it did have the desirable lightness. The metallurgists finally developed a formula containing other metals and alloys that was not only almost as light as aluminum, but combined with that lightness ample strength and toughness to make it ideal for crankcase use.

A special foundry for brass and aluminum castings has been developed at the Buick factory for making crankcases and other parts of Buick cars, and a large part of this trained and well-equipped organization was turned over to the making of Liberty motor crankcases when the

order for Liberty motors was placed with the Buick Motor Company.

Beyond making new patterns, very little change was necessary in the foundry equipment. The furnaces, traveling cranes, moulding machines, core making equipment, ovens, conveyers and everything else necessary for the making of high grade castings was ready, and the same production system used in the manufacture of Buick crankcases was followed in casting crankcases for the Liberty motor.

The metal came in already prepared, in huge pigs, and was taken from the stock room as required and melted in the big furnaces.

WHILE the metal is being melted, the cores are prepared. A special grade of sand is required for core making, as the cores are used to make holes or hollow spaces in the interior of the finished castings and must be removed when the casting has cooled. Therefore, the core sand must be held together by some substance, known as core compound, which bakes hard at low temperatures and disintegrates at the high temperature of the melted metal. Thus when the core is placed in the mold after baking in the core ovens, it is firm and retains the shape of the hole or hollow space required until the wall of metal has hardened sufficiently, and when the casting has cooled the cores may be easily broken or shaken out.

The first operation in core making is to screen the sand and the next to mix it with the right amount of core compound. The mixture is then taken to the core making benches, where it is

carefully molded to the required shape by the core makers, inspected and placed on racks. In this condition the cores are quite fragile and they are wheeled with care to the core baking ovens where they are baked at low temperature for several hours until they are hard. After being again inspected for defects they are delivered as required to the molders to be incorporated in the molds.

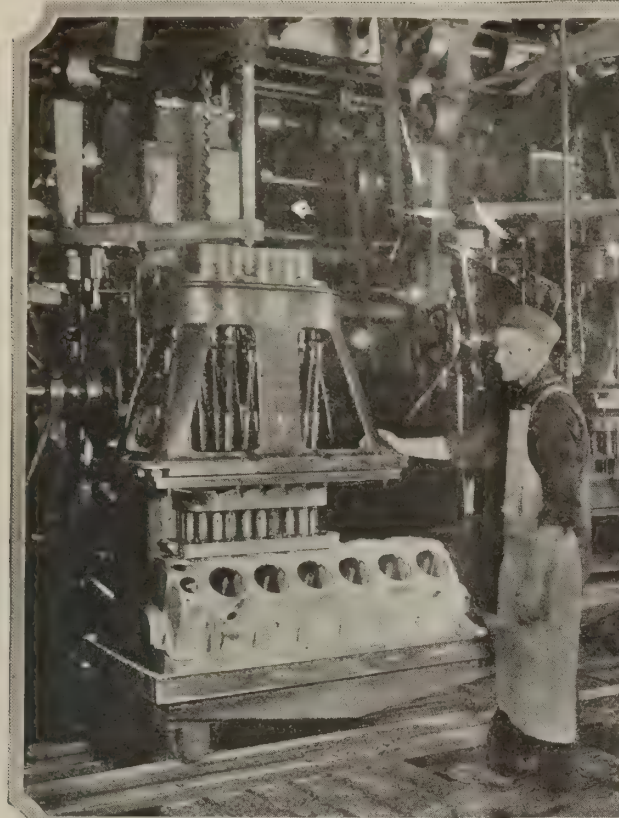
THE next point of interest is the arrangement of the molding and pouring floor. This department is long and fairly narrow and is entirely covered by a traveling crane. The operator of this electric crane sets the pace for the entire department.



Above—The Buick Brass, Aluminum and Bronze Foundry, where Liberty motor crankcases were cast
Below—Making the molds for Liberty crankcases on the Buick compressed air molding machine



The Buick Motor Building, covering seven and one-half acres of ground, where Liberty crankcases were machined and finished



Drilling the holes in Liberty crankcases by means of templates and multiple spindle drills

At either end of the track are the molders, the pouring being done in the center, directly behind the row of electric furnaces. The crane operator goes first to the sand pile, lifts a supply of molding sand with his grab bucket and deposits it beside the molders. Ready to the molder's hands are the wooden frames in which the molds are made. These frames are made in two sections, with detachable bottoms. The molders stand before the automatic molding machines, which are operated by means of levers.

The platform of the molding machine carries the metal pattern, around which the workmen place the molding frame and then put in the facing sand. The facing sand is unusually fine, to give the exterior of the casting a smooth surface, and is followed by the molding sand until the frame is filled, when the automatic shaker is set in operation and forces the sand into every nook and corner of the frame and closely about the pattern. More sand is added and shaken down until the frame is filled, when it is leveled off and the bottom board placed over it. Then the hinged platform of the machine is turned over by the compressed air, leaving the lower half of the mold right side up, the metal pattern loosened by a compressed air vibrator and lifted out, when the mold is lifted by the electric crane and carried to the proper place on the molding floor.

The electric crane then proceeds to the other end of the line, where the top half of the mold has been prepared in a similar manner. Lifting the top half carefully, the crane returns to the molding floor and by the time it arrives the cores have been placed in position, when the top half is carefully lowered and fastened in place.

THE mold is now complete. Pots of molten metal are waiting for it and the pouring is done. The molds remain in position until the metal has cooled, when hooks from the crane are fastened to the casting, and the casting whisked to the far end of the room and placed on a conveyer of the endless belt type, which elevates it to the cleaning floor above.

The crane then returns to the mold, the sides of the mold are removed and the bottom, containing the molding sand, is lifted by means of hooks and carried by the crane to the sand pile, where it is emptied and "tempered" for use again.



Reaming out the holes to fit the cylinders

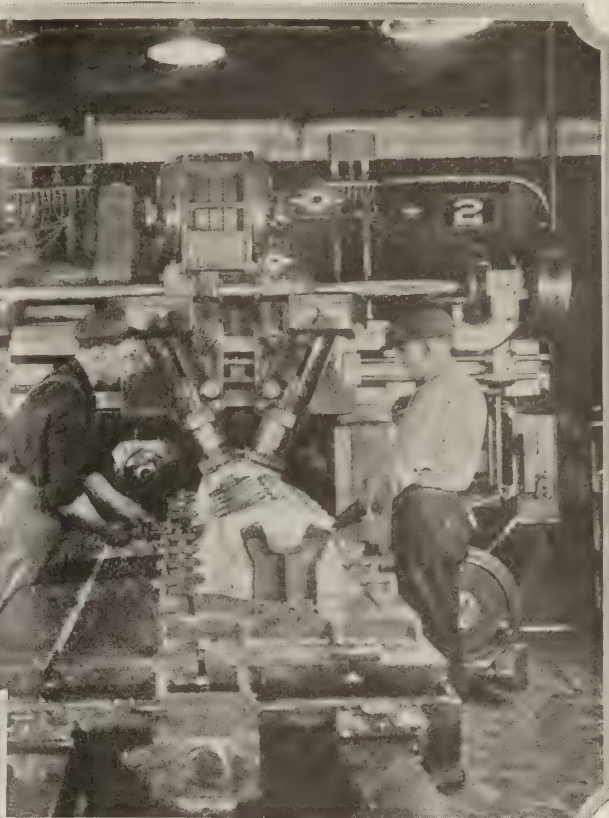
After leaving the cleaning floor, where all core sand is removed, the castings are sorted and put into chutes leading back to the first floor. Here they are put on band saws that saw off the "gates," or extra metal formed by the holes in the molds through which the metal is poured.

The chippers and grinders then remove all roughness from the exterior, the castings are tested very critically for leaks and sand holes, the final inspection given and the castings then go to the machining department.

THE machining department is located in the immense Buick motor building, which covers seven and one-half acres of ground, all in one mammoth room.

On account of the fact that the Liberty motor had eight or twelve cylinders and the Buick motor has only six, it was necessary to make a great many new tools, dies, jigs and fixtures for handling the Liberty crankcase in this department. This big task was very efficiently handled by the tool making department operated in connection with the building of Buick motors, and soon the machining of Liberty motor crankcases was progressing as effectively as the ordinary Buick production.

Special cutters were made for the big milling machines that smooth off the tops of the crankcases where the cylinders are bolted on. The same thing was done for the inside faces of the case. The crankcase was of course made in



Milling off the tops of Liberty motor crankcases, both sides simultaneously

two sections, upper and lower, and some of the work involved was of an extremely accurate nature. For example, the two halves of the case were fitted together with the use of a gasket, and after machining off the faces they were ground down with grinding compound on surface plates, until the surfaces were absolutely true. This particular operation was done entirely by hand.

Needless to say, each operation was followed by the most critical inspection, both on the part of the Buick officials and the uniformed government inspectors.

All holes were bored, wherever possible, by means of templates and multiple spindle drills, and labor-saving machinery was used wherever it insured accuracy as well as efficiency.

ONE of the most important features of all, however, was that the production system was already worked out and the plant, most of the equipment, the personnel of the organization and everything else for the actual building of the motors were ready and waiting.

It will be recalled that while the utmost accuracy was required on every single operation performed on Liberty motors and parts, at the same time our fliers were hungry and waiting for these motors and speedy production was second only to quality from the government's standpoint.

No greater test of a manufacturing organization can be made than this: To ask it to produce an article of intricate design and high quality in big quantities and in a short space of time.

The Buick method of building Liberty motor parts, as far as the production system was concerned, varied but little from that employed in building parts for Buick motors. Of course, the huge quantities in which Buick parts are built and the permanence of the Buick product

justified the use of much expensive special machinery that in the very nature of things could not be used for the larger Liberty motor parts. But the line-up of the different operations, the very comprehensive system of conveyers, the progressive method of building the parts and the intelligent adaptation of the labor saving machinery with which the plant abounds, enabled the Buick Motor Company not only to turn out parts and completed motors that passed the government inspection but to do so on a rapidly increasing scale.



Grinding down the two halves of Liberty motor crankcases on surface plates to make a perfectly tight joint



The Buick Model H-Six-50

THE biggest advantage in buying a Buick car is that you get a Buick Valve-in-Head motor. Next to that is the range of selection that enables you to select the body type that exactly fills your needs as to passenger capacity and other service requirements.

Each Buick model is designed especially for a definite class of service, and even the little details will be found to be admirably worked out.

Buick engineers have kept one point constantly in mind, however, namely, that no matter for what purpose a car is to be used, to give perfect satisfaction it must be thoroughly sound mechanically.

So Buick efforts have been concentrated on a single chassis mechanism, and the purchaser of a closed Buick is assured of the same



Seven-Passenger Closed Model

powerful motor and the same protection against mechanical difficulties as the man who buys one of the open models. All Buick cars are equally rugged.

The model H-Six-50 is a big Sedan for seven, with an especially rigid body, due to its four-door design and solid construction. The elegance of the exterior is in harmony with the inside fittings, which are carried out in perfect good taste and with a high degree of comfort. There are two extra disappearing chairs, the interior is upholstered in cloth, with silk shades, trimmings and carpet to match. Two dome lights furnish the illumination. All doors may be securely locked for safety when leaving the car.



"The Buick Sedan is the best all-season car obtainable," says Mrs. Eugene Lorton, of Tulsa, Oklahoma. And she ought to know, because she is an experienced motorist and takes keen pleasure in driving her own car. Mrs. Lorton is the wife of the editor and publisher of the Tulsa Daily World



Mr. R. F. Empson is a merchant of Bloomington, Illinois, and is a very enthusiastic Buick owner. "I am mighty pleased with the Buick Coupe," he writes. "Have taken some pretty hard trips on very difficult roads and it never falters. I find the Buick a sturdy, economical car"



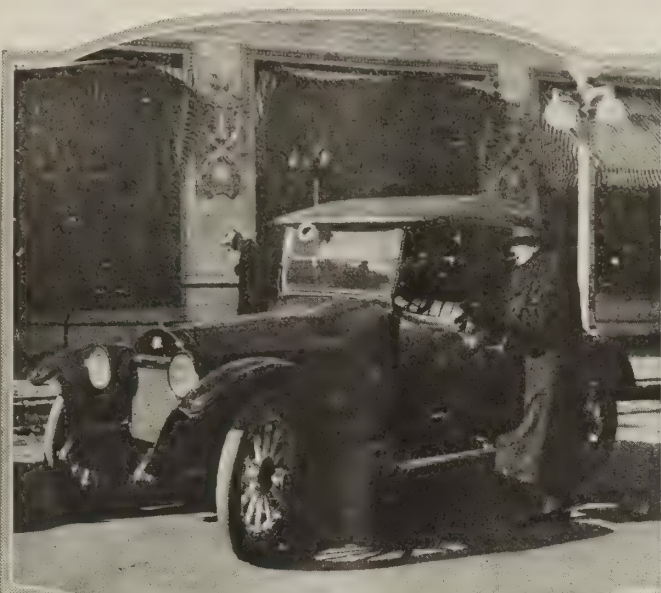
Almost without exception, woman's work in the great war was immensely facilitated by the motor car. The Buick car here shown was used by the National League for Women's Service, of Omaha, Nebraska. From left to right, the occupants of the car are: Major Westbrook, Captain Jordan, Private Shuckert and Private Montgomery. The car was in constant daily service and was cared for by the women of the Motor Corps



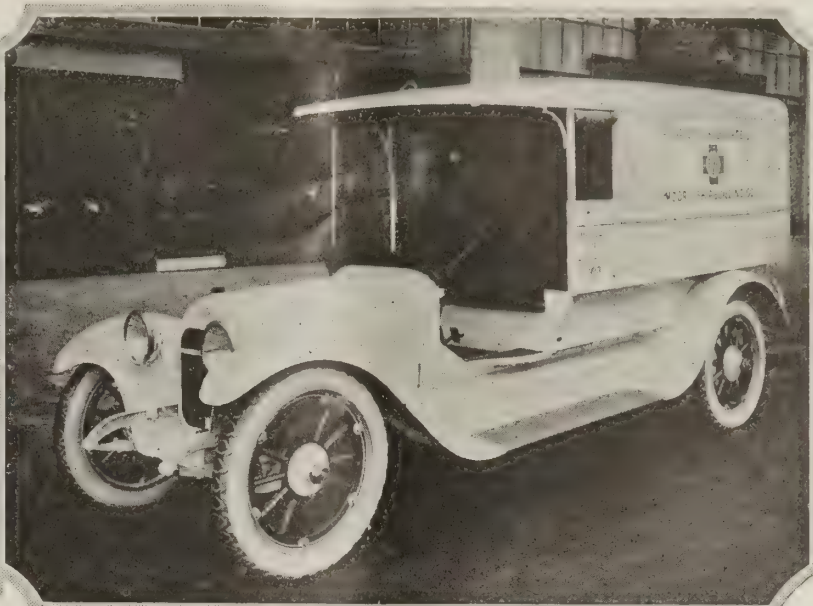
"Reliability" is the outstanding feature of the Buick Coupe, according to Mr. Austin Miller, of Oklahoma City. Mr. Miller is a furniture manufacturer and needs a car constantly in his business. He has selected the Buick Coupe as being best adapted to his needs and is well pleased with the service rendered by the car



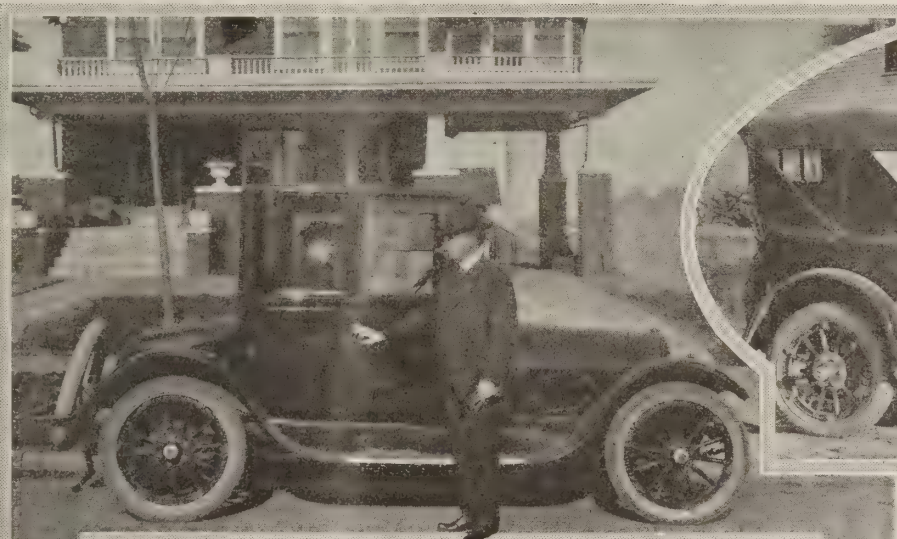
Hon. Ralph A. Metcalf, Washington legislator, is one of the most active of Washington's state senators, and motoring in his Buick Coupe is his hobby. He is a familiar figure in all parts of the state and very seldom travels by rail. His principal method of getting around is his Buick Coupe, in which he covers the whole state of Washington



Mr. J. E. Crosbie, president of the Central National Bank, of Tulsa, is noted for his conservative investments. And with him the purchase of a motor car is an investment. "I have owned four Buicks. For dependable service they are unexcelled," writes Mr. Crosbie



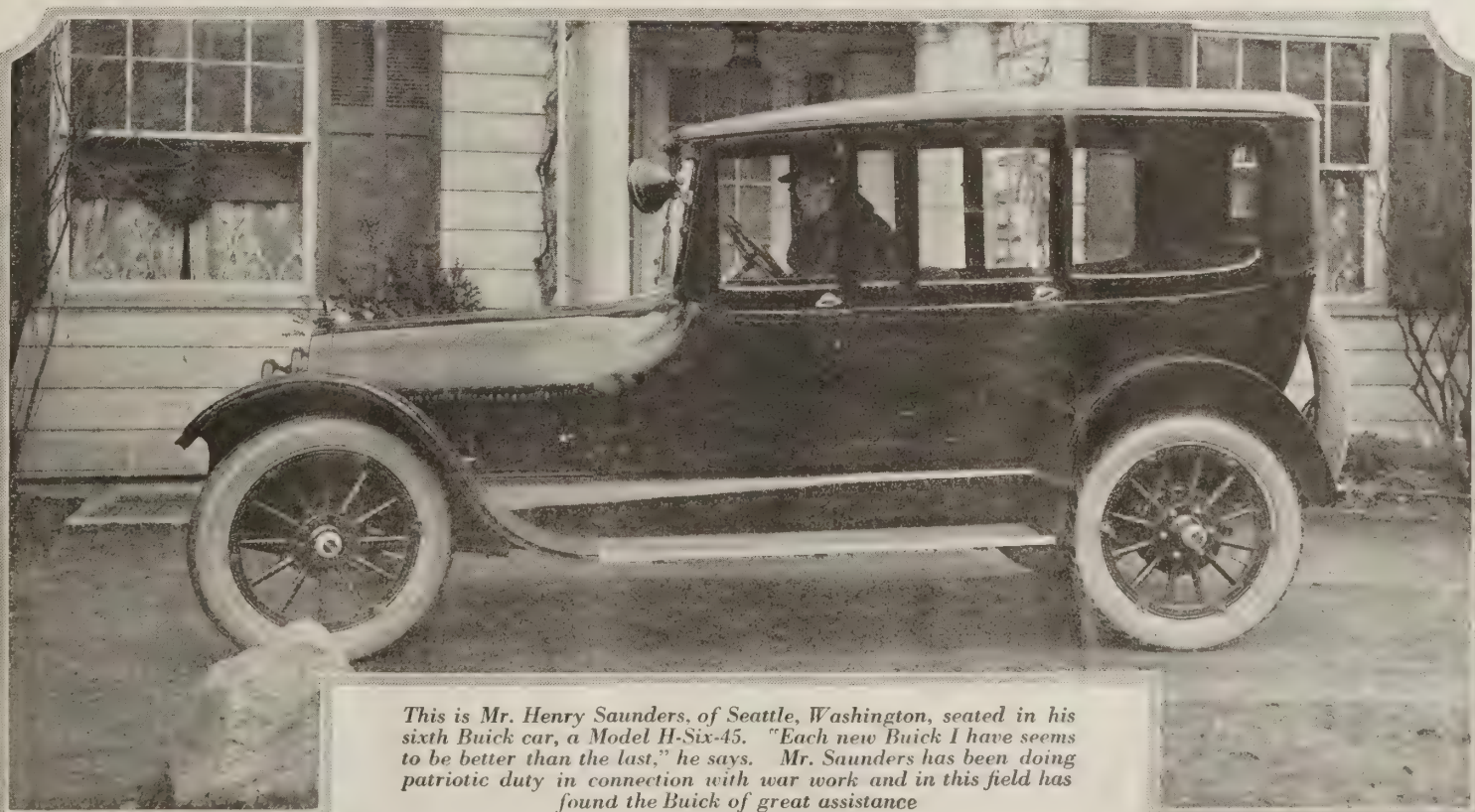
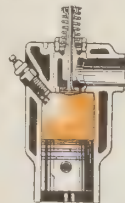
Here is a Buick Model D-Six-54 car that has been converted into an ambulance after serving for three years on the sugar beet plantation of the Union Sugar Company, at Santa Maria, California. The car was given a mechanical overhauling and sold to the Aetna Life Insurance Company for ambulance work in the large Pacific Coast ship yards of the Moore Shipbuilding Company



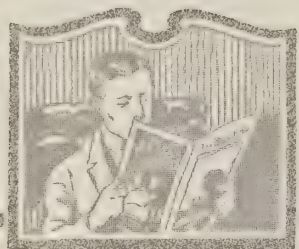
Mr. and Mrs. J. L. McKeown, of Oklahoma City, are here shown with their Buick Coupe. Mr. McKeown is an oil operator and uses his Model E-Six-46 daily in his business as well as for family purposes. "I find that the Buick Coupe gives me efficient service at all times," is his tribute to the car



Mrs. J. H. Martin, of Rayne, Louisiana, has driven her Buick Model E-Six-49 more than 6000 miles without a particle of trouble and without any expense for repairs. Mrs. Martin keeps accurate car records and says she is averaging 17 miles to the gallon of gasoline



This is Mr. Henry Saunders, of Seattle, Washington, seated in his sixth Buick car, a Model H-Six-45. "Each new Buick I have seems to be better than the last," he says. Mr. Saunders has been doing patriotic duty in connection with war work and in this field has found the Buick of great assistance



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Washing the Car

WASHING a finely painted motor car seems like a simple thing, but there are some details that must be given attention if the lustre and quality of the finish are to be preserved.

The first thing is to give the entire car a good wetting with a hose from which the nozzle has been removed. This will remove the dust and grit and will soften any mud that may be caked on. Next go over the car with the hose, playing the stream on each cake of mud until it falls off or is washed away. This operation should be continued until the entire surface of the car is free from any gritty substance that would tend to scratch the body if rubbed with a sponge.

After this is done, go over the body with a sponge kept for this purpose only, and be sure to wash the sponge out well before putting it away. Use soap in washing the sponge and rinse it out thoroughly. In most cases, the sponge will remove all foreign matter from the surface of the body, but grease spots may have to be taken off with a little soap. Soap, however, should be used on bodies with discretion and should be most thoroughly rinsed off. Fine laundry soap should be used, as free

alkali is fatal to finish, and the water used in washing a car should be cold.

Another sponge should be used for the frame and running gear, under side of fenders, etc. Mud and grease accumulate on these parts much more than they do on the body, and the sponge or chamois used for this purpose should never be used on the body. Use a clean chamois to remove the water after washing.

Body polishes, if used at all, should be used with a great deal of rubbing, so as to remove all of the polish.

If this is not done, the polish will become sticky and will catch every bit of dust that settles on the car, making it necessary to wash it more frequently and increasing the danger of scratching the body when rubbed with a sponge.

The upholstery may be cleaned with a slightly dampened cloth when it has become quite dusty. Otherwise it is best to dust it off with a dry cloth or feather duster. Under no circumstances use a wet cloth, because that will make muddy streaks on the leather that will be hard to remove. Just enough dampness in the cloth to pick up the dust is sufficient.

Tops should be cleaned according to the material in them. Mohair tops should not be wet, at least until all the dust has been removed

from them with a stiff brush or a vacuum cleaner. Wetting mohair tops while dusty causes the dust to work into the cloth and makes it difficult to get out. Rubberized tops or tops made of imitation leather may be washed with a hose and rubbed off with a clean sponge or cloth.

Windshields may be cleaned like an ordinary window. The same thing applies to the glasses on the lamps. Never attempt to wash or rub the silvered reflectors inside the lamps. If a little dust should get in them, blow it out.

Linoleum floor and running boards may be cleaned with soap and water or with a good scouring powder. Carpets and the cloth upholstery on closed cars are best cleaned with a brush or a vacuum cleaner, removing grease spots with gasoline or naphtha.

Do not let careless or inexperienced people clean your car. And do not let the car go too long before washing it. Mud and dirty water often contain ammonia or other substances that will dull the finish, and even if you do not have time to wash the car thoroughly after a muddy drive, turn the hose on it and wash off the most of the dirt.

Motor cars should not be kept too near a stable, as the ammonia fumes sometimes have a bad effect on the fine finish.

THE HAPPILY MARRIED HOLDENS

Continued from page 4

With a sudden furious gesture she flung the silver trinket into the farthest corner of the room, which wasn't very far, and ran back upstairs.

Noiselessly, but panting, she flung herself into her bed, and thought. She was not dazed now, her mind was bell-clear, and the facts, the positive, undeniable facts ate into her mind like acid. There was no hope of a doubt. McElroy Holden, her own husband, had deliberately, in her absence, brought home another woman, had entertained her in the parlor, had turned out the parlor light at the approach of the cab, and had lied and deceived his wife; and then, thinking her asleep, had gone down and let that woman out by way of the window! The very clearness of the evidence, the natural course of the proceedings, were all so plain and indubitable, that Louise's spirit of judicial inquiry was satisfied at once. And then her heart broke.

She burst into uncontrollable sobs. She choked and shook in paroxysms, while the scalding tears flooded her distorted pillow.

The muffled sounds awoke Holden. Springing from his bed, he clasped her racked form in his arms.

"What is it?" he cried; "Lulie! dearest, what is the matter?"

Unable to articulate, she shook and sobbed in his arms, and as he stroked her hair and tried to calm her, she finally burst forth: "How could you? Oh, Mac, how could you?"

"You know, then?" he said in a low, ashamed voice, "you know, Lulie?"

"Yes; I saw you go down stairs, and I heard you open the window. Oh, Mac, don't you love me any more?"

"Oh, Macsie, how could you?" she wailed again, the endearing name pronouncing itself in spite of her effort to be severe.

"Honest, Lulie, I don't know how I could! I'm thoroughly ashamed of myself, dear. It was despicable of me. But if you know how I've longed—for six years—oh, I just yielded to an ungovernable impulse—can't you forgive me, Lulie! Just this once?"

"Then you admit it?" Louise pushed him away from her and sat straight up in bed, her blue eyes staring wide.

"Of course I admit it," and Holden spoke a little pettishly; "you must know for yourself—as you heard me open the window. And I knew you'd be mad, but honest, Loolums, I didn't think you'd carry on like this!"

"And you opened the window to let her out?"

"I opened the window to let it out! Why do you say *her*?"

*When
Better Automobiles
are Built
Buick
Will Build Them*

Holden's voice was decidedly cross, his manner curt and angry, but in Louise's heart welled up a sudden joy.

"Dear, who was in the parlor with you, when you heard my cab and switched off the light?"

"Nobody," he returned, sulkily.

"What were you doing in there?"

"Smoking," and Holden's air was that of a very sensitive little boy caught stealing the very best company jam.

"Smoking! Oh, Macsie!" and two soft arms flung themselves round his neck in an eloquence of joy and forgiveness.

"Oh, I know it was silly, and I'll never do it again; but Louise I just *had* to smoke in that parlor once—or bust! It was an obsession, or whatever you call it. You never would let me smoke in there, and when I got the chance, I just went in, deliberately, and put my feet up

on a dinky blue satin chair, and I smoked right into those lace curtains! So, there, now!"

"And you locked the parlor door, so I wouldn't know it! And when you thought I was asleep, you sneaked down to raise the window—"

"And let out the smell of smoke! Yes, Oh, Honey-blossom off a peach tree, you aren't going to be mad, are you? You will forgive your fool boy, won't you? For six years I've been possessed to do this thing, and now I've done it—and it didn't hurt your old curtains, anyhow."

"No, it didn't. But what a silly performance, Mac."

"Yes, wasn't it? Forget it. Not half as silly as your crying yourself sick over it. And by the way, Lulie, I brought you home a present. Want it now?"

"What is it?"

"One of those foolish, idiotic, ridiculous fiddly-fads, with powder-dinks and things in it."

"You bought one of those—for me?"

"Yes. And when you weren't here, I opened the box, there in the parlor, and then," he chuckled, "I couldn't get it for you, for fear you'd smell smoke. I'll run down and get it now."

"No; leave it till morning. I'm too sleepy now to look at it."

And that is why, when Holden was again asleep, Louise went again softly downstairs, and, rescuing the pretty vanity-case from its corner where she had flung it, she carefully replaced it on the table where she had first seen it.

And it was not until the next evening that she said, most casually, "Who sat with you in the train, last night, Mac? Martin said a girl did."

"Yes, old Jim Hutchins' niece. Met old Jim in the station, and he asked me to watch over the kid as far as Riverville. She's here to visit them."

"What's she like?"

"Silly as they make 'em. Tried to flirt with me, and got mad because I didn't appreciate the honor. Oh, Lord, Lulie, there's nothing so unattractive as a callow youngster who makes up to a married man!"

WHAT DO BUYERS LEARN AT THE SHOWS?



The Buick Exhibit at the New York Automobile Dealers Show, February, 1919

THE annual automobile show has become an established institution in practically every center of population in the country, and the question is frequently asked, "What real benefit is to be derived by the average motorist from attending the automobile show?"

The answer to the question must be given somewhat along the lines of that given by a prominent man to the student who asked him what educational value there was in a trip around the world. "It all depends upon yourself," he said. "You get just what you are looking for. You can make a pleasure trip out of it, or you can make a study trip out of it, embracing some of the deepest problems concerning human existence."

The prime purpose of the automobile show is educational. Here the visitor sees the latest improvements on practically all of the cars on the market, including the mechanism, body types and features, conveniences, etc. Like the globe trotter, he is also confronted by much scenery, represented by gaily painted cars, novelties, decorations and devices designed to attract the eye or excite the curiosity.

So the trip to the automobile show is just what the visitor makes it. He can spend an hour, or several hours, wandering among the various booths and taking in the general appearance of the new cars, or he can spend the same amount of time in making comparisons of the cars as a whole, learning quickly and completely as much as he cares to know about the makes in which he is interested.

Most visitors to the automobile shows follow the latter course, and the leading companies make an extra effort to have their exhibits so conveniently arranged as to make it possible for the visitors to learn the main points of superiority in their product in a short time.

Certainly, the important thing to know about a motor car is its mechanical efficiency, and for this reason the cut-out chassis holds the greatest interest for the big majority of automobile show visitors. Such a chassis shows almost at a glance the design of each and every working part, and the relation of one part to another. And these points are very vital in the life and efficient service of a motor car.

The Buick contention has always been that a motor car, because it is a machine, should

be bought as a piece of mechanism first, and that all other considerations are secondary to this one main fact. The central point of the mechanism is the motor, because the rest of the car is built around the source of power.

The cut-out chassis is an ideal place to study the motor design, because it clearly shows the gas passages, combustion chambers, water-jacketed space and other points that have a bearing on efficient operation. Then, by comparing one motor with another and questioning the men in charge of the various chassis, a good insight into the question of motor design may be obtained.

In discussing internal combustion motors, it is first necessary to get one fact firmly fixed in mind, namely—that they are all heat engines. In other words, they derive their power by converting the fuel used in operating them into heat, and it is the expansion of the heated gases resulting from each explosion in the cylinders that supplies the impulses necessary to run the motors.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be. In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water-jacketed space there is in a motor, the greater the thermal (heat) efficiency will be, because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases both inlet and exhaust valves form a part of the combustion chamber, where the heat is greatest, and in consequence it is necessary to water-jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. This pocket is water-jacketed. In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water-jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water-jacketed, it follows that the Valve-in-Head type affords the minimum of water-jacketed space that is possible to be secured for any given size of cylinder.

Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water-jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the big valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is more perfect in the Buick motor because the mixture is purer.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other type of motor, a quicker ignition of the charge and a smaller loss of heat through the water jackets. The sum of these advantages in design is more power with less gasoline consumption.

To these characteristics of design is added in the Buick motor the fruit of nearly twenty years' experience in building Valve-in-Head motors exclusively, and in improving the design consistently every season throughout that period.

Old Buicks Make Fast Friends



*When Better Automobiles are Built
Buick will Build Them*



A Real Old Timer

IN a recent letter, Mr. W. S. Everett, of Port Angeles, Washington, writes as follows regarding his 1905 Buick car: "It certainly draws the crowds whenever I bring it to town. I believe the upholstery is as good as the day it was made. The last trip I made in it was 150 miles and it never missed a kick. It seems to get better with age."

Buicks in Stage Service

HERE are four Buick cars owned by Reid Brothers, of Chehalis, Washington. All four cars are operated in daily service on stage runs between Chehalis and Olympia, Chehalis and Raymond, and Chehalis and Bunker.

One is a Model C-4 Buick built over into a 16-passenger car, and it has given wonderful satisfaction in this extremely arduous service.

The remaining three cars are all Model 49, seven-passenger Buick cars, fitted with racks on the running boards for carrying luggage.

The service given all of these cars is very hard, because the trips must be made on schedule time, regardless of weather conditions. Very frequently the cars are much overloaded, both with passengers and baggage, but in spite of that fact, Reid Brothers are highly pleased with their performance and find all four Buicks to be excellent investments.



THE proof of motor car quality is length of service. And it is a proof that is easily understood. No technical arguments are necessary to back it up, no engineering theories need be advanced, no discussion of materials and methods have to be indulged in. Actual service speaks for itself.

Today there are several hundred thousand Buick cars in service, and among these are thousands of cars that have been in use for many years. You will find a great many enthusiastic Buick owners in all sections of the country, but nowhere does this enthusiasm run higher than among the owners of these veteran cars whose usefulness is not yet done.

The reason for this enthusiasm is obvious. The cars have far exceeded the fondest expectations of their owners at the time of purchase, and the measure of service that they have rendered has built up a standard for Buick cars that is unique in the extreme.

For long service has a way of searching out weaknesses and defects, and quality is the only safeguard against constant hammering and jarring of miscellaneous driving.

Nearly twenty years of actual experience now lie behind the Buick product, and the constant effort during the entire period has been to build Buick cars better and better from one season to another. Profiting by that experience, the Buick cars of today are the best cars that have ever been turned out by the Buick Motor Company, and their usefulness is not confined to any definite number of miles or seasons of use.

The Valve-in-Head principle of motor design as developed by Buick engineers is responsible for the power and performance of Buick cars. But without the quality built into the cars as a result of painstaking manufacture, these cars could never have earned the enviable reputation that they now enjoy.

Owens Two Venerable Buicks

I HAVE received the Buick Bulletin for some time," writes Mr. William J. LaGrange, of Rensselaer, N. Y., "and note that you show some of the old timers still on the job. But I can't see where they have anything on me, as I have used the old 2-A 1910 Buick ever since I have had it. Now, in place of lightening the burdens of the aged, I have built a trailer to attach to it and can now pull two loads at once. As you will note from the business, it does not haul feathers by any means, but iron and wire fences, loaded to more than full capacity. It seems to make no difference in the power and the car never gets stuck.

"You will find enclosed a picture with both loaded—about 3000 pounds. I expect to go over the car again this winter and use it for several years yet.

"So much for the old 2-A, 1910.

"I also have a Model 28, 1912, still in first-class shape—never had a piston out of it—and she is still 'some class.' Yours for the old-time Buick."

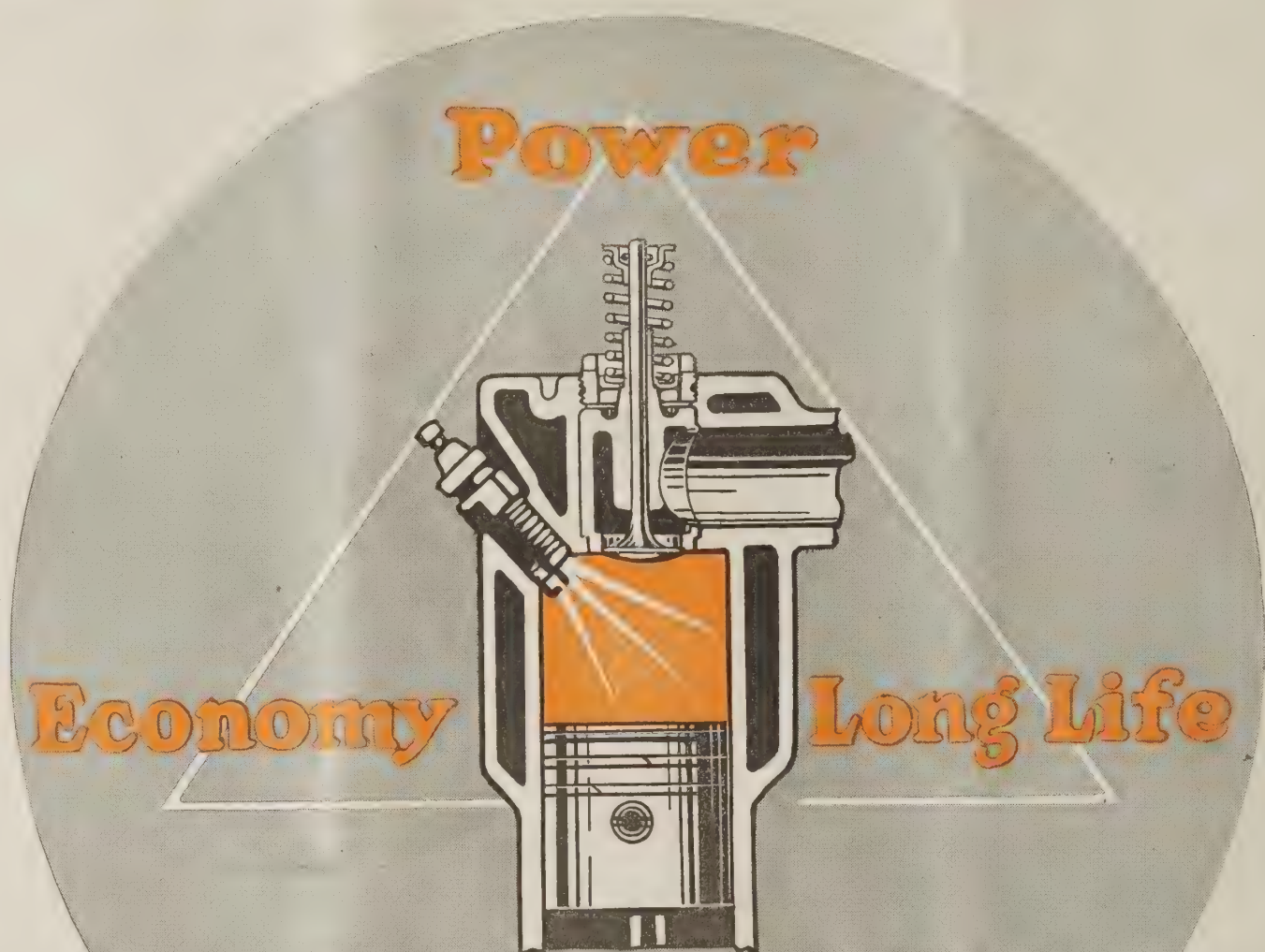


EVERY DAY sees the motor car more firmly wed-
ded to business enterprises, wherever speed is an
object and distances have to be overcome.

Quite logically, Buick cars have only insures reliable transportation
been adopted by many thousands under trying conditions, but the
of business men for this service, frugal Buick Valve-in-Head motor
both singly and in numbers. For furnishes surplus power at surpris-
the well-knit Buick chassis not ingly small running expense.

Buick Motor Company, Flint, Michigan

*Pioneer Builders of Valve-in-Head Motor Cars
Branches in all Principal Cities—Dealers Everywhere*



Everybody knows Valve-in-Head means *Buick*

NEARLY twenty years have been spent in developing the Buick Valve-in-Head motor, with the idea of getting the utmost from the possibilities of the Valve-in-Head principle of design.

As a result, the Buick motor today is remarkable for three characteristics which, to our mind, interpret the goal for which every motorist is seeking. These three virtues are—Power—Long Life—Economy.

Buick motors have always been noted for their Power, on the road as well as on the testing block.

Long Life has been secured by the skill and science that have been applied to their manufacture, in one of the world's largest and best equipped motor car factories.

Economy is the natural result of correctly applying the principles of the Valve-in-Head design. The minimized water-jacketed space, coupled with good design and extremely accurate manufacture, has demonstrated this fact to the satisfaction of Buick owners everywhere.

The Buick Valve-in-Head six-cylinder motor is available in six useful body styles.

Three-Passenger Open Model H-Six-44	-	-	-	\$1495
Five-Passenger Open Model H-Six-45	-	-	-	1495
Four-Passenger Closed Model H-Six-46	-	-	-	1985
Five-Passenger Closed Model H-Six-47	-	-	-	2195
Seven-Passenger Open Model H-Six-49	-	-	-	1785
Seven-Passenger Closed Model H-Six-50	-	-	-	2585

f. o. b. factory

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars

BRANCHES IN ALL PRINCIPAL CITIES - - DEALERS EVERYWHERE

29,208-

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THE *Buick* BULLETIN

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In this issue—Building the Liberty Motor—Page 6



And the poet, faithful and far-seeing,
 Sees, alike in stars and flowers, a part
 Of the self-same, universal being
 Which is throbbing in his brain and heart.

Gorgeous flowerets in the sunlight shining,
 Blossoms flaunting in the eye of day,
 Tremulous leaves, with soft and silver lining,
 Buds that open only to decay;

Everywhere about us are they glowing—
 Some like stars, to tell us Spring is born;
 Others, their blue eyes with tears o'erflowing,
 Stand, like Ruth, amid the golden corn.

In all places, then, and in all seasons,
 Flowers expand their light and soul-like wings,
 Teaching us, by most persuasive reasons,
 How akin they are to human things.

From Longfellow's "Flowers"

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Number Five

THE BOOMERANG By Lillian Bennet Thompson

Illustrated by John Newton Howitt

MARTHA Bence, sitting bolt upright on the sofa, her hands tightly clasped in her lap, met her son's surprised gaze uncompromisingly. "Come in," she said, as he hesitated in the doorway. "Don't stand gapin' at me like a great gaby; come in!"

It was a room calculated to produce acute depression of hilarity. In David Bence it never failed to arouse a feeling of awe, being associated in his mind only with funerals and other solemn events. He himself had last crossed its threshold, he remembered, on the occasion of his father's burial, eight years before. Its door was never even opened, save for the periodical "turning out."

For David to find his mother there, at this hour—after eleven—was singularly disquieting.

"Set down," she directed, indicating a chair near the mantel.

David's boots creaked noisily as he crossed the room to the uncomfortable chair she pointed out.

The boy's sunburned, good-humored face wore an expression strange to it—a look that was compounded half of bewilderment, half of shy ecstasy, which was not lost upon the mother.

Martha Bence was not a large woman. Her wiry, angular frame housed an indomitable will that, once set, nothing had ever been able to swerve or break. She fixed a piercing look upon her son. "I s'pose you thought I didn't know what you was up to!"

"I dunno what you mean, ma," the boy said diffidently.

"Oh, you don't! Well, I mean I know what you've bin goin' up to the city fer! You're bin chasin' after that yellor-haired school teacher!" She shot the accusation at him triumphantly. "You thought I was a fool, didn't you?"

"You bin awful smart, ain't you? Thinkin' you was pullin' the wool over my eyes so's you could bring her here an' set her in my place—that flirtin', man-huntin' huzzy! I s'pose you b'lieved I'd be lamb-meek an' support her an' you, didn't you?"

David's heart sank. This was far worse than he had bargained for. Of course, he had known that his mother would object; that was inevitable. But he had hoped against hope that he could, in some way, overcome her opposition. If she once knew Elsie, she would love her, as he did. Why, no one could help loving Elsie, with her blue eyes, her golden hair, her sunny smile and pretty ways!

"Ma," he began, pleadingly.

"Don't you 'ma' me, Dave Bence! You've lied to me——"

"I didn't, ma. I——"

"What? Ain't you acted a lie? Didn't you go fer to deceive me, eh? You knew I wouldn't hear to your courtin' her, so you went about it underhand! You bin courtin' her, ain't you?"



*One day David
saw her weed-
ing the flower
bed by the
fence*

All his life, David Bence had told his mother the truth, the whole truth and nothing but the truth. He sighed.

"Yes, ma."

"I knew it! Well, let me tell you right here, young feller, that the day you bring that female into this house, you both walk out of it to stay! There ain't goin' to be no poetry-readin', fool-notioned, lazy city gals settin' around here fer me to wait on! Forty years I've lived on this farm an' slaved an' toiled from mornin' til' night to make it pay. It's time I had a rest; an' if you had any decency about you, you'd a' picked out some nice girl like Min Skinner, who'd take holt and help me git red of some of the care an' worry. There's a girl worth havin'! Twenty dozen riz biscuit she made with her own hands fer the church supper, an' not one of 'em burnt ner underdone! There ain't a better cook nor manager in the village than Min."

"But, ma," David cried eagerly, "Elsie's a splendid cook! She fixed the dinner all herself today an' it was fine. An' she makes her own clo'es, too, she——"

"And they look it!" interrupted his mother scornfully. "Of all the fussed-up, hifalutin' things fer a respectable girl to wear! I'd be ashamed fer child 'o mine to be seen in 'em. An' them heels—two inches high! The way she minces along on 'em is enough to make the cow laugh! I dunno what's got into you, Dave Bence."

"But, ma——"

"Hush up! What d'you mean by interruptin' me? This is my house, ain't it? And this is my farm. Your dead father, what you're tryin' to disgrace, left 'em to me, free an' clear, didn't he? You're just a dependin' on me, ain't you?"

David's broad face flushed.

"I'm axin' you," persisted Mrs. Bence. "Ain't you jest a dependin' on me?"

"I guess," ventured David, "I earn my keep. It—it seems to me I oughter be let marry the girl I want, it does, ma."

"That's gratitude!" shrilled Mrs. Bence. "That's gratitude, that is! Here I've wore out my life slavin' fer you, an' you set there an' tell me you work harder'n I do."

"You don't understand, ma," protested David, shuffling his feet uneasily. "I only said——"

"Oh, I know what you said! I understand, right enough! After all I've done fer you, you're ready to bring some lazy city girl in here to make things harder. You think I'll drop off pretty soon, mebbe, an' you an' her'll have the farm! Well, I guess you're mistaken!" Her pointed jaw shut with a snap. "I ain't ready to step off yet, an' as long as I can raise a finger to prevent it, she'll never set foot in this house! You tell her so fer me! It ain't no use your talkin'; when I say a thing, I mean it; you know that, Dave Bence!"

David did know it. He had known it from his childhood, as his

meek, stoop-shouldered father had known it before him. But to give up Elsie, to shut out all the light and color the girl had brought into his life and go back to the old drab, joyless existence.

He made one more protest.

"But, ma, you don't understand," he said again. "I know you do too much; I've said so for a long time. Elsie wouldn't make any more work for you; she'd be a help. She could tend to the cookin' and lend a hand with the sewin' an' things. She's right handy, an' she's a good girl, too. Them high heels of hers—why, lots of girls in the city wears 'em, and she's used to 'em. She's smart an' capable, even if she is little. She's earned her own livin', an'—an'—I love her, ma."

"Oh, you do, do you?" Her eyes were cold and relentless. "Well, you can jest get over it. If you're hankerin' to get married, you can take Min Skinner; I guess she'd be willin'. It's high time I had somebody to help me with the work, anyhow; I'm wantin' a rest."

"Elsie'd help you, ma; she—"

"Elsie! Well, let me tell you, I ain't wantin' that kind o' help! You can make up your mind to that, an' the sooner the better! If she's looking fer a husband, she can go elsewhere. Tomorrow you can write her an' tell her she'd best begin makin' eyes at some o' them shiftless fools that's been runnin' around tryin' to spark her."

"Now, you git off to bed; there's hayin' to be looked to in the mornin'."

"Yes, ma," said David submissively. He creaked to the door, then turned, his mild brown eyes very wistful.

"Don't you s'pose, ma, if I was to work a lot harder we could git a hired girl—jest fer a spell, till Elsie kinder got used to your ways? I—I'm pretty fond of her, ma, an'—an' sometimes I git lonesome. We'd both do all we could to make it easier for you, ma—"

Martha Bence's tense voice broke in upon his faltering speech.

"Hired girl! Me, pay out my hard-earned money so's that—that—" she paused for want of a sufficiently opprobrious term—"that school teacher could set around an' lollygag with you? Have you gone clean crazy, Dave Bence? Now, I don't want to hear no more out o' you. You're a-goin' to do's I say. Git to bed."

Slowly the light died from the boy's eyes. He turned and went out of the room, leaving his mother standing with outstretched hand, ready to put out the lamp as she had quenched his hopes of happiness; a grim, implacable figure. And he stumbled up the stairs to his little bed-room.

It was common talk in the village before another sun had set that "Marthy Bence had put her foot down." When David had first started making his regular trips to the city, there had been much speculation as to "how Marthy would take it." Miss Lewis, the post-mistress, had called up Mrs. Mott on the telephone. And there were seven subscribers on Mrs. Mott's line, consequently eight eager ears listened when Miss Lewis exultantly announced that she had had it from Marthy Bence herself that David would go to the city no more.

Nor did he. From babyhood, he had been dominated by his mother. The crudely pathetic

little letter he sent to the girl he loved proved how complete had been his subjugation.

When Elsie Osborn read the few scrawled lines, she laughed. Then she cried. Finally she dried her eyes and indignantly told herself that she didn't want anything to do with a man who was still in leading strings. If David Bence chose to let his mother rule him, she would have none of David Bence.

So Elsie put on her prettiest frock, did her hair becomingly and set out an appetizing dinner for Jim Davis, who had promised to come in to the city that day to see her.

Davis owned a down-at-the-heels farm next to the Bence place. He was older than David, and inclined to be lazy; but he had long admired Elsie, and that astute young person had seriously considered accepting his proposal

"But, ma, I don't want to git married. I—"

"No, you don't want to do nothin' that'll take some o' the work an' care off'n my shoulders! I've drug my very heart out here, slavin' fer you, an' all you want to do is stan' an' gape at Jim Davis' wife! It's jest time you done somethin' else. You hitch up the sorrel t'night an' take Min Skinner fer a buggy ride!"

"I ain't a-goin' to," said David, with a flash of spirit.

"Ain't you? We'll see about that. I've told her you was comin', an' go you shall!"

After all, what was the use? David asked himself, drearily. His mother was set on his marrying Minnie Skinner; she would give him no peace until he did. He supposed he might as well do it and have it over.

It was a curious little group that sat down to supper in the farm house kitchen the snowy day he brought home his bride. Martha Bence, a white apron tied over her best black silk, her thin lips wreathed in a satisfied smile, her manner breathing victory; David, in Sunday broadcloth, with the still shining patent leather shoes he had worn to do homage to Elsie Osborn, his brown eyes slightly wistful as he looked at Minnie, his wife, who wore a wonderful creation of baby blue silk and white tating, that served to emphasize the yellow tinge in her complexion and seemed to make her large red hands larger and redder.

It was a silent meal, for the most part. David had nothing to say and Mrs. Bence made the conversation, while Minnie, in the intervals of giggling, divided her attention between David and her new high heeled shoes. She had

bought them because she knew he had admired a similar pair worn by Elsie Osborn, now safely Elsie Davis. She wondered if he had noticed them, and kept pushing one foot out from her chair toward him, so that he must surely see it.

"I declare!" exclaimed Mrs. Bence, pausing in the act of putting a huge slice of pumpkin pie on David's plate, "if I didn't go an' ferget the cheese! Min, you get it. An' Dave, you eat all that pie; you ain't et nothin' at all!"

"Where'll I find it, ma?" Minnie pushed back her chair obediently.

"It's down cellar, on the shelf, under the big brown stone cover. Seem's good," she added complacently, as Minnie started for the stairs, high-heels clicking on the bare boards of the floor, "to be waited on, fer a change. Now, you're here, Min, I'm goin' to take lots o' rest an' comfort."

"Sure, ma," rejoined her daughter-in-law, casting a coquettish glance at David from the head of the cellar stairs. "You jest set—"

The sentence was never finished. There was a crash, a scream—and a series of heavy thumps as the girl fell down the steep, narrow flight. She had caught her heel on the top step.

They picked her up and carried her, limp and white, to the bedroom on the second floor. David departed, posthaste for the doctor, while his mother applied all the home remedies she knew in a vain effort to restore consciousness.

Dr. Taylor, a stout, brisk little man, banished everyone from the room, while he made his examination. (Continued on Page 12)



"But, Ma! you don't understand" he said again

when he made it. She believed that he would work and work hard, if he had sufficient incentive. Only—she had really cared for David.

In three months, they were married.

David received the news with apathetic resignation. He did not blame Elsie; there was no reason why any girl should refuse a good chance, and Davis was smart enough. The farm, too, was a good one; it only needed proper attention.

In silence David bore his mother's gibes and sneers, plodding steadily about the commonplace routine of his work, planting, weeding, harvesting.

September came and went. The Davis place had begun to lose its dejected air. Barns had been repaired and repainted; the ramshackle house blossomed forth in a shining coat of white and green. There were new muslin curtains at the windows; the grass in the doorway was kept neatly trimmed and flowers bloomed in the beds.

The farm was in a fair way to be made to pay well, under the competent direction of young Mrs. Davis, who was becoming famous for her cookery.

One day David saw her, dressed in a pretty blue gown, weeding the flower bed by the fence. He watched her for some moments, then turned into the cow-shed, nearly colliding with his mother who was coming out.

She stopped and looked at him sourly from head to foot. "Moonin' yet, are you?" she said grimly. "I'd be ashamed! I guess it's high time I got you married. That'll take the nonsense out'er you!"

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

AN ARTICLE on the subject of Shifting Gears, on page 12 of this issue of *The Buick Bulletin*, gives rise to a train of thought in connection with the owner's getting out of his motor car all that the manufacturer puts into it.

We are accustomed to look upon a motor car as a piece of machinery. Let us for the present regard it as so many dollars' worth of service. That is really what the owner buys—transportation service—no matter in what specific kind of use he may employ it.

And this transportation service is really what the engineer, the metallurgist and the skilled mechanic put into a motor car, and into each mechanical detail that forms a part of the whole.

Yet we find every day, in all sections of the country, motor cars of the same make and model, operated under almost identical service conditions and for approximately the same length of time, some of which are in excellent mechanical shape while the others are lacking in power, smoothness and many other essential qualities.

UNDER the modern manufacturing and inspection methods employed in the Buick factories—representing a development covering a period of nearly twenty years—the parts for Buick cars are built under uniform conditions every day in the year. And these uniform conditions go much deeper than the actual dimensions of the parts. For not only are the parts exact duplicates of each other within limits measured in thousandths parts of an inch, but the material in those parts is so critically analyzed and tested that they possess a remarkable uniformity in physical properties—hardness—tensile and torsional strength—elastic limit.

A visit to the Buick factories is a positive revelation to the average man, and a source of pleasure to the man who is well versed in fine manufacture. For on every hand may be seen the perfect union of Science and Practice, all contributing to the rigid rule of uniformity that insures the Buick purchaser of a definite transportation value.

So the purchase of a Buick car is not a matter of luck or guesswork. And the matter of getting good service from a Buick car is not a matter of luck, either, but simply depends upon how it is operated and cared for.

THERE are many ways in which a car may be unintentionally mistreated, just as there are many ways in which the laws of health may be violated to the injury of the human system. Buick engineers have really accomplished wonders in rendering the operation and care of Buick cars simple and easy, but the fact still remains that any piece of mechanism can be injured if it is not properly handled.

The first point has been emphasized so many times that it is quite familiar to most motorists, and that is the question of proper lubrication. Still, every dealer knows that cars continue to be brought in with bearings burned out, king bolts badly worn and other parts of the cars more or less damaged from under-lubrication. Oil should not be used too long, because after a time it loses much of its lubricating qualities. This is an especially important item to watch now, because good lubricating oil is not always available at all filling stations.

The matter of shifting gears is fully covered in the article above referred to. It should be read by every driver.

Another point is the use of the gears in hard pulling of all kinds. It should be borne in mind that Buick motors have an excess of power, because of the extent to which the Valve-in-Head principle of design has been developed in them. And because of this surplus power, Buick drivers as a class gradually cultivate the habit of not shifting to the lower speeds, but doing everything on high speed. After a time they really grow to hate the idea of dropping to second speed, as if it were a reflection on the car or their own driving ability.

THIS is a condition that should not exist. Buick engineers, in putting the excess power under the Buick hood, had in mind the elimination of most of the gear shifting necessary in the average car. In consequence the Buick car is everywhere noted for its hill climbing ability and its power in mud, sand and snow. But if the avoidance of shifting is carried too far, simply for the satisfaction of doing something that the other fellow's car cannot do, unnecessary strain is put upon the motor. This means that a certain amount of the serviceability that was built into that motor is wasted, where it could be saved through the medium of the mechanical principle incorporated in the transmission. It is like asking a man to lift and carry a very heavy

load, instead of dividing it into two or three parts that he could handle easily. In the first case he would soon be exhausted, but in the latter he would still be fresh and ready for other work.

That is what the transmission is for—to conserve the serviceability and lengthen the life of the motor—and its intelligent use should be studied by every motorist.

Another bad practice is that of letting things go. The old saying, "A stitch in time saves nine," is a good one and it pays to have the little things attended to promptly. It really doesn't take much time to take the proper care of a motor car—and every minute spent in doing so spells Conservation, in capital letters.

Tight spring clips will prevent spring breakage—and they work loose occasionally, especially on a new car. Mud caked on the body and left there will spot the finish. A scratched fender or any sheet metal part may rust along the scratch and undermine the enamel.

These same ideas apply to practically all of the little things that may happen to a motor car in general service, and a weekly inspection by the driver will do a great deal toward getting the utmost serviceability out of his car. We are often reminded of a man we knew years ago, when motor cars were not as dependable as they are today. A friend asked him, "Why is it you never have to stop on the road to fix things?" He answered, "Because I keep my car in shape by giving it the proper attention at regular intervals."

SO the Buick owner who does not have the time or inclination to attend to these things himself will do well to see that they are done by someone who is thoroughly competent. They don't take much time and the man who is mechanically inclined will derive much pleasure from becoming more familiar with the various working units of his car.

The local Buick dealer is interested in the service that every Buick owner receives from his car, and is equipped to look after the little things that require attention from time to time. Perfect satisfaction depends upon having the little things taken care of promptly.

A good motor car responds wonderfully to good treatment, not only from the standpoint of satisfaction but also from that of giving the owner the full amount of transportation service that has been built into his car.

Building the Liberty Motor

IT IS impossible for any individual to perform a task requiring skill and precision without putting something of himself into it. The same thing holds true on a vastly larger scale with an organization of the size and complexity of the Buick Motor Company.

Liberty motors were built from blue prints and specifications furnished by the government, but the problem of building these motors in quantities and according to a pre-determined schedule was of necessity left to the Buick experts to solve.

The best of workmen can work in but one way, and that is the way that experience and training have taught him. The Buick organization for nearly twenty years has been developed and built up along very definite lines, so that the production system as a whole, the special equipment and the methods followed by foremen and workmen are essentially Buick in character.

SUDDENLY this organization was called upon to build a new product. And it had to be done in the Buick way. The Buick motor building, in which the Liberty motor was built, covers seven and one-half acres of ground and is equipped to the smallest detail with machinery and apparatus for building high grade motors in quantities.

Through this monster building the production stream of raw material, completed units and finished parts flows without interruption. It would have been well-nigh impossible, as well as extremely inadvisable, to cast aside a production system that had proven so satisfactory in the past and was at the time worked out to such a high state of perfection. Each department in this building is laid out in such a way that the raw material flows into one end and finished parts emerge at the other end at exactly the right point in the assembly line to be absorbed by the unending procession of motors filing past. Lost motion and wasteful methods have been reduced to the lowest possible minimum.

The planning for the Liberty motor was all



done in advance. As soon as the working drawings were turned over by the engineers to the factory officials, the work of altering equipment to make it fit the requirements was begun, and by the time it was finished the officials

leaves the car. By the use of an electric crane attachment he is able to lift whole truck loads of parts or raw materials and deliver them with great speed to the proper department. In addition, each department has its own special type of conveyers, according to the character of the work done. The electric conveyer may be compared to a great water main supplying a certain district, and the other systems to smaller pipes tapping the main and conveying the water to the point where it is used, namely, the assembly chain.

Each of these departments is a manufacturing department, building a certain part of the motor, and one of the big tasks in preparing for manufacturing this motor was the making of special tools, dies, jigs, fixtures and the altering of machinery in order to give the best results in the manufacture of Liberty motor parts. This work was done by the Buick tool

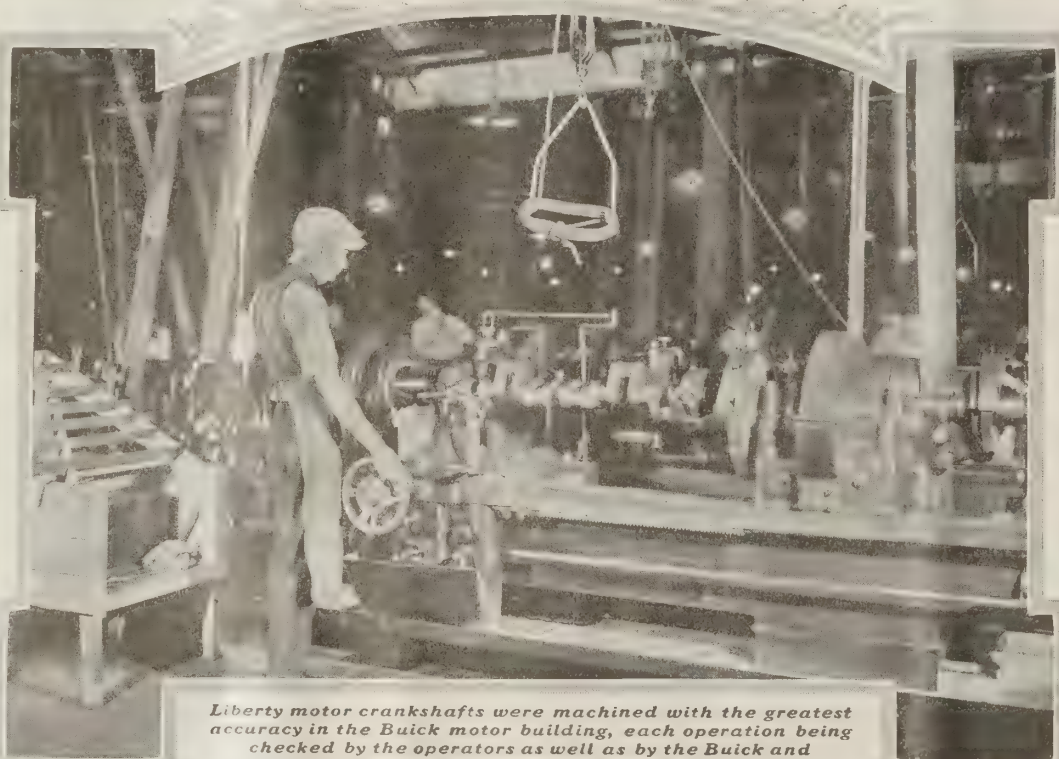
making department and the master mechanic's department, and in a surprisingly short space of time everything was in readiness for the manufacture of complete motors.

These departments branch off at right angles to the assembly tracks, which run down the center of the building. The raw material is delivered at the outer ends of the departments, passing from one machine to another until the parts are completed, beside the assembly tracks.

AT intervals in each department the inspectors are stationed, so that the preceding operations may be checked and passed before further work is done on the parts. In the case of the Liberty motor parts, the same inspection system

was followed, in spite of the fact that the government authorities had their own official inspectors in the various departments, so that all Liberty motor parts were subjected to rigid, double inspection.

As stated above, the assembly tracks are in the center of the building, extending the full length, from the spot where the crankcases are finished to the point where the motors receive



Liberty motor crankshafts were machined with the greatest accuracy in the Buick motor building, each operation being checked by the operators as well as by the Buick and official government inspectors

knew exactly where to start and where to finish each operation.

THE remarkably complete conveyer systems were a big asset. The central part of these systems is the overhead monorail conveyer that runs like an overhead trolley car from one department to another. This conveyer is operated by one man who never



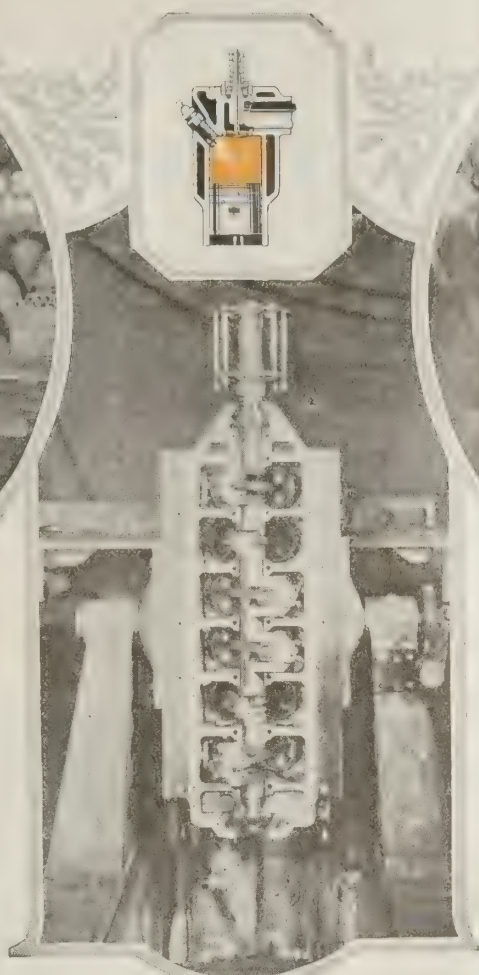
This photograph shows how the holes were drilled in the Liberty motor crankshaft to carry the oil to the bearings, under pressure from the oil pump



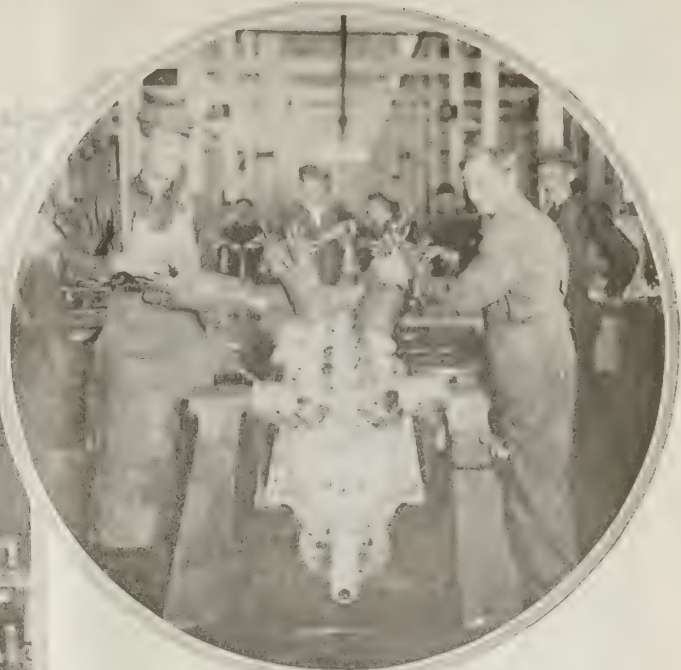
Utmost cleanliness is as necessary in good manufacturing as in good housekeeping. These men are washing the Liberty crankcase in gasoline



The beginning of assembly—assembling the pistons and connecting rods to the crankshaft



Revolving assembly stands enabled the workmen to turn the partly built motor to the most convenient position



Crankshaft mounted in the crankcase and the twelve cylinders being bolted on

their final inspection before going to the testing department. The Buick method of assembling is known as progressive assembly, because the work progresses without interruption from one crew to another until the motor is complete.

There are two main advantages of this system, namely, accuracy and speed. Both are due to the fact that the workmen are divided up into crews, each crew having certain operations to perform. In this way, singular proficiency is developed by these men in performing the operations of which their work consist. They learn how to do each with the utmost efficiency, and it is not long before each man becomes an expert. The chance of error is almost eliminated by this system, and the vigilant inspectors keep such close watch over the work as it progresses that a perfect product is guaranteed.

This system was of course developed in the manufacture of Buick cars and has been applied to every manufacturing department throughout the vast institution. It was no trick to apply it to the building of Liberty motors with the most gratifying results.

AT THE head of the tracks are found numbers of wheeled assembly stands, made to fit the tracks. The lower half of the crankcase is first placed upon the stand, the crankshaft is next put in place, then the upper half of the crankcase, the main bearings tightened down. Then come the cylinders, pistons and connecting rod assemblies, and in a remarkably short space of time the painstaking work

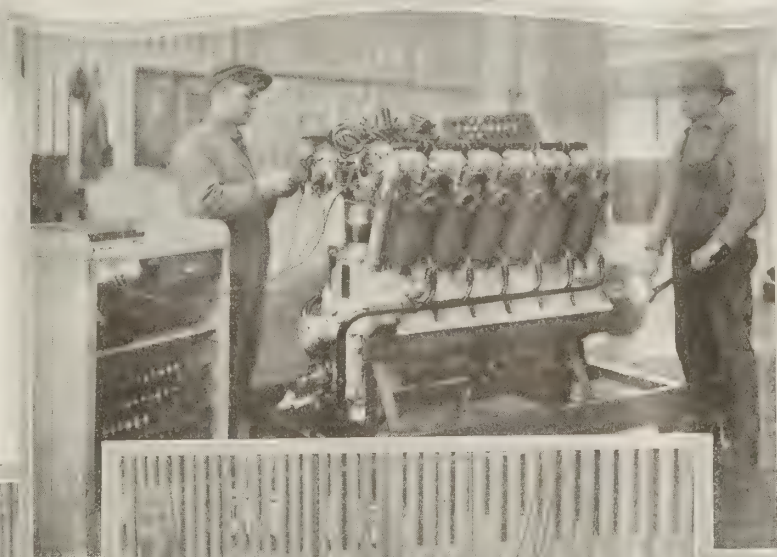
of assembling the motor is accomplished. As each operation is finished the workmen push the stand along to the next crew, take the next stand that is ready and waiting for them, and so on.

It is a well-known fact that the finest workmanship on motor parts may be entirely undone by improper and inefficient assembly, so that perhaps the greatest single asset the Buick

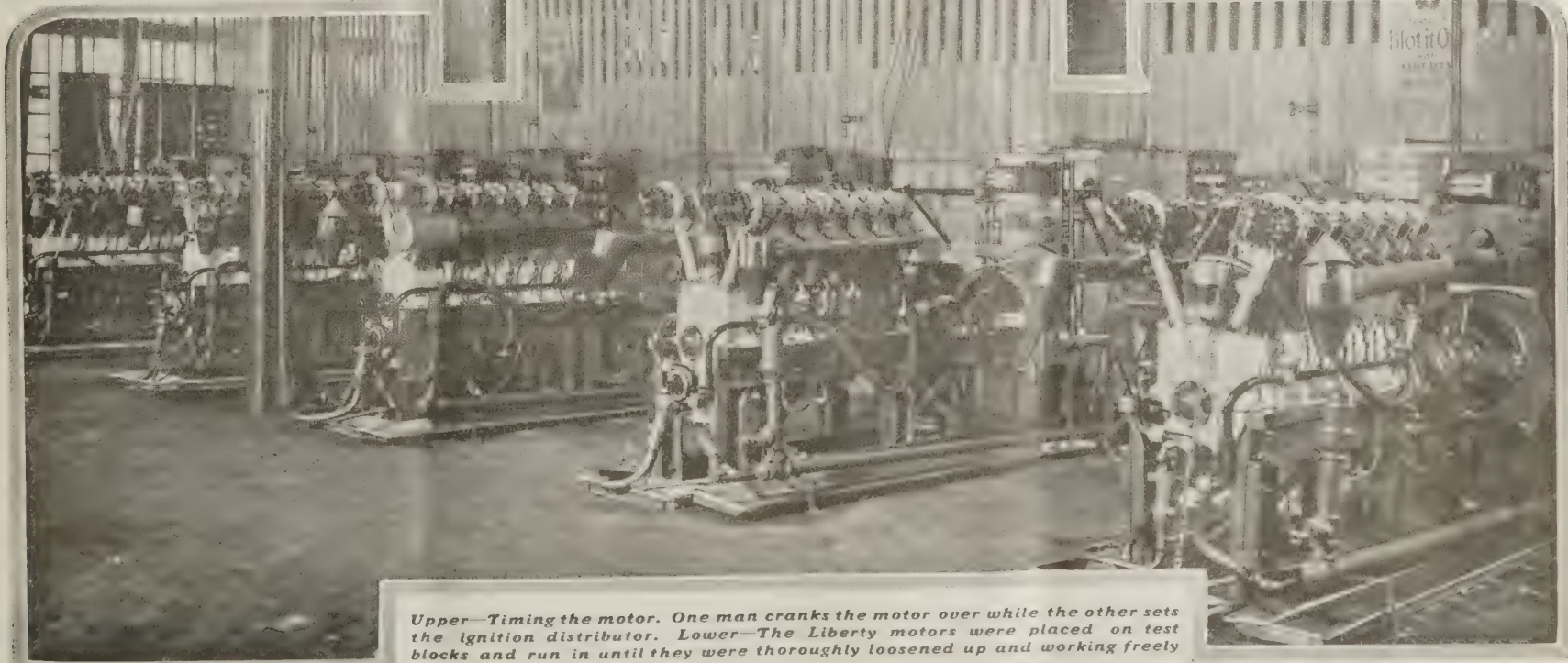
Motor Company had to offer in building Liberty motors was the highly trained organization that had been built up through the years. There are thousands of workmen who have been in the employ of the Buick Motor Company for many years, together with foremen, department heads and executives. There is an old saying to the effect that "there is no substitute for experience," and it was this accumulated experience, coupled with vast manufacturing resources, that enabled the Buick Motor Company to so quickly change its factory to manufacture the Valve-in-Head Liberty motors, and at the same time to make a production record of which every man who was connected with the work will always be proud.

THE instructions given by the government authorities were that quality was the first consideration, and speed the second—but that speed was such a close second that unless it could be accomplished the quality wouldn't do the army much good either. In order to thoroughly impress these facts upon the workmen, the Buick Motor Company had a number of posters designed, engraved and printed in colors. These posters, hung conspicuously in all parts of the factory, inspired the men by word and picture with the important part they were playing in the "army behind the army."

The pains that were taken at the outset insured the quality, and the smooth-running production system insured the quantity—the two prime requisites in the building of Liberty motors during the war.



Upper—Timing the motor. One man cranks the motor over while the other sets the ignition distributor. Lower—The Liberty motors were placed on test blocks and run in until they were thoroughly loosened up and working freely





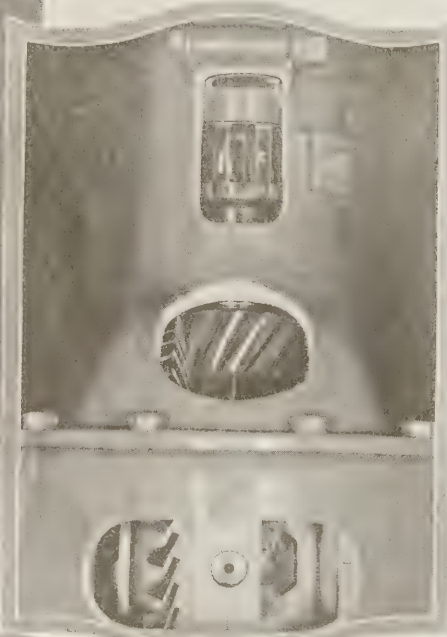
Service and emergency brake construction



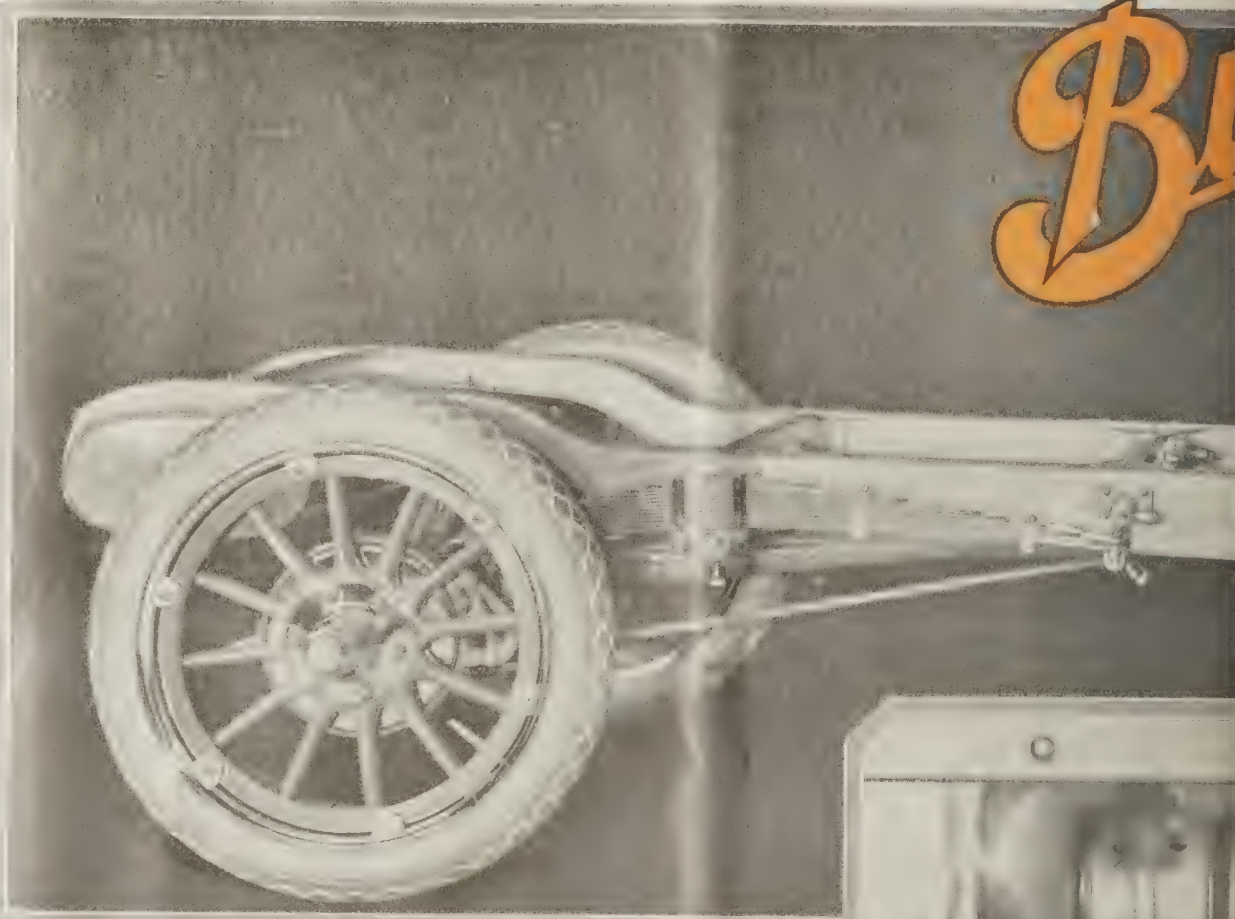
Buick disc clutch and housing



Interior of Buick transmission



Buick pinion shaft, adjusting nut and ring gear



Large crankshaft and flywheel

The Buick cut-away chassis is familiar to a large percentage of the motorists of the country, because it has been exhibited at most of the automobile shows this year. This chassis attracted a great deal of attention because of the thoroughness with which it revealed the design and construction of every working part of the Buick car. From year to year the interest of motor car purchasers in the purely mechanical units of the cars increases, because upon these units the full enjoyment of the non-mechanical features depends.

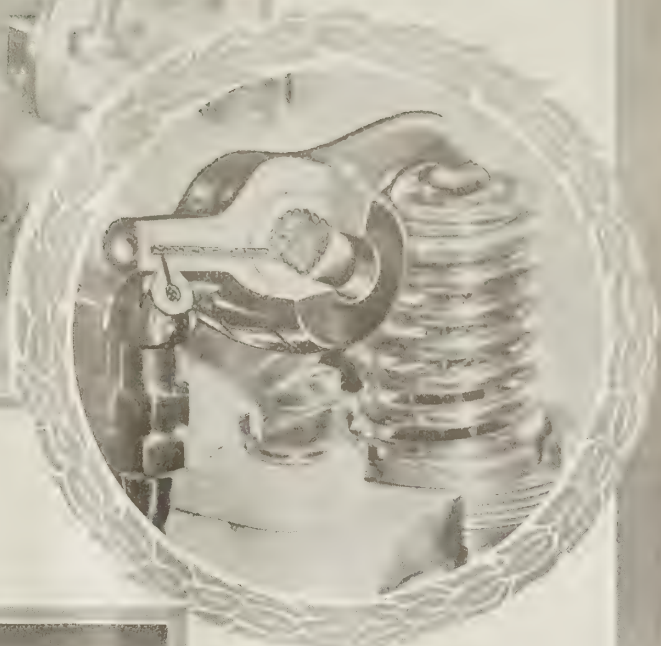
The Famous Buick



Water jacket, inlet and exhaust manifold construction

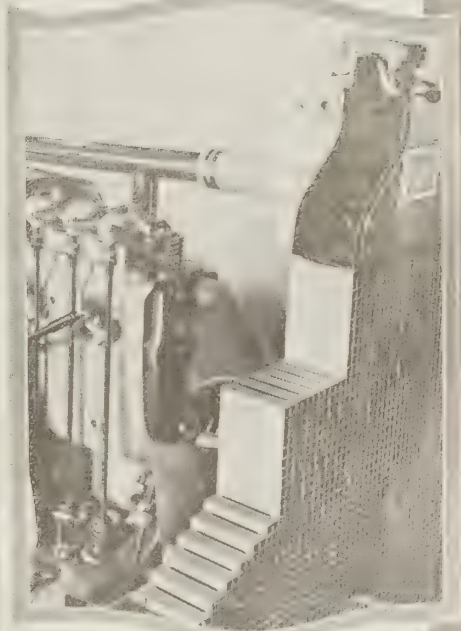
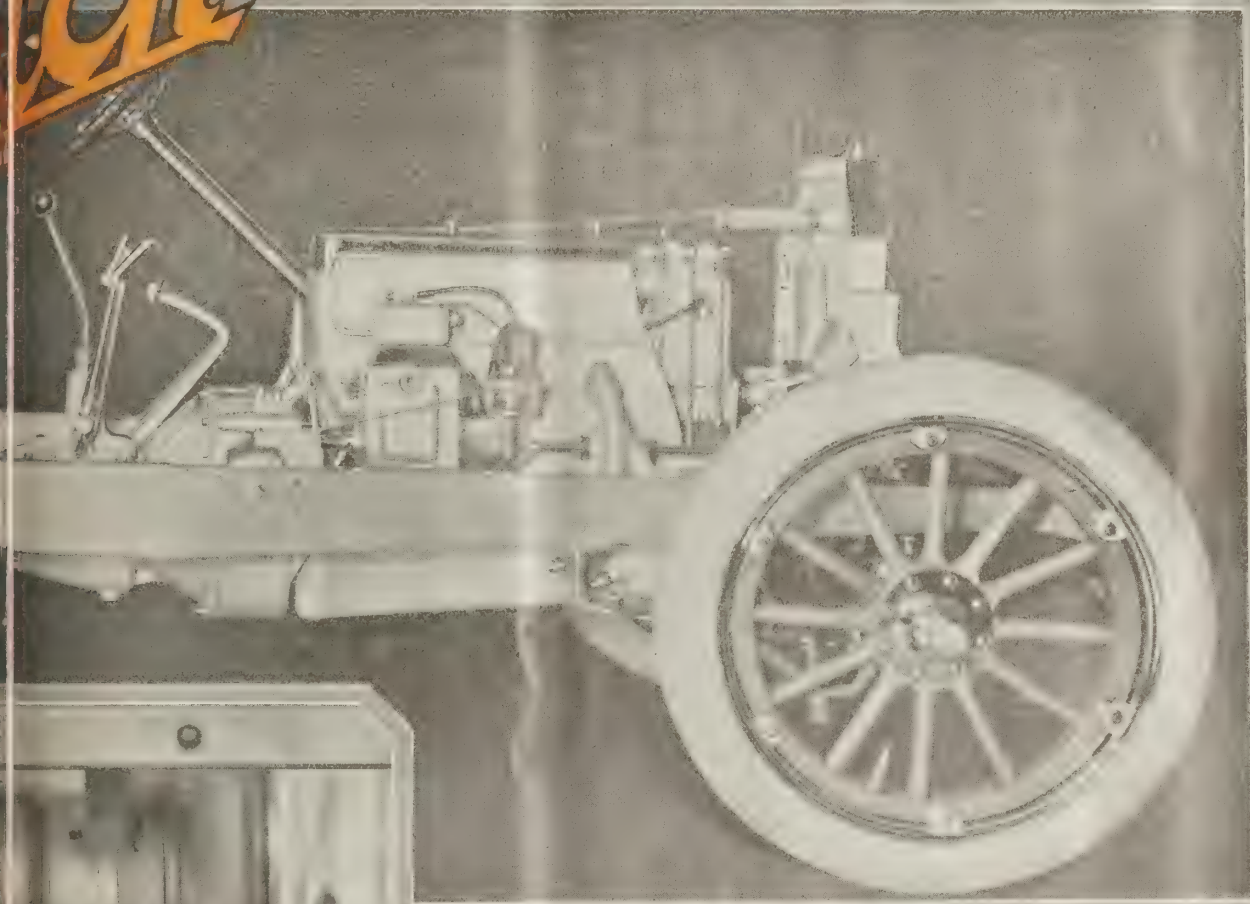


Lower end of push rod, with spring



Method of automatically lubricating rocker arms

ick



Detail of Buick cellular radiator construction



Connecting rod bearings

Cut-away Chassis

Close inspection of a completed car gives a full and correct idea of its convenience, appearance and comfort. But many of the most vital working parts are so hidden that it is impossible to form even a hazy idea of their design or manufacture. The detailed pictures above show how the Buick chassis units of the latest type have been co-ordinated to make up a well-balanced mechanism. Each unit, including the Buick Valve-in-Head motor, is backed by the experience gained during nearly twenty years.



The motor car on the farm is not merely a sign of prosperity—it is a sign of good business judgment. For a good motor car can be made to effect important economies in time and labor that no other mechanism can equal. Here is a Buick car owned by Mr. J. R. Sibley, of Spencer, Massachusetts, that not only performs the thousand and one duties that are expected of a car on the average farm, but in addition actually helps with the farm work. Mr. Sibley has a 40-foot silo for his stock, and the Buick is shown in this photograph operating the silage cutter and the blower that forces the silage up through the 40-foot pipe and into the silo.



Dr. D. E. Mavity, of Fowler, Indiana, owned four cars before he finally settled down to the Buick. Since joining the Buick family he has purchased three Valve-in-Head models, the latest being the Model E-Six-46 shown in the picture. Based on his own experience in driving his cars constantly the year 'round, Dr. Mavity makes the statement that Buicks are the only 12-months cars sold.



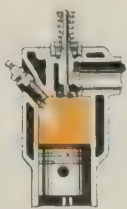
This Buick Roadster played a big part in housing and feeding 3,000 officer students at Camp Martin. The car is owned by the proprietors of the Hotel Grunewald, of New Orleans, who had the contract for providing for these officers. The car was operated between the camp and the hotel, and the service rendered was very pleasing to its owners.



Mr. Charles G. Hill, of C. G. Hill & Company, Oklahoma City, Oklahoma, uses his Buick Model E Six-49 for business under all weather conditions. Mr. Hill is well pleased with the Buick and its reliability, counting it a valuable asset to his business.



Mr. Frank Laidlaw, of the W. S. Laidlaw Wire Company, Peoria, Illinois, writes as follows: "We are the proud owners of four Buicks—a D-35 driven 25,000 miles, an E-49 driven 12,000 miles, one E-44 driven 5,000 miles and another E-44 driven 3,500 miles. Last summer we made a trip through the west in the E-49, calling on our western trade. Also made a side trip to Pike's Peak. All four models are giving first class service and if we were in the market for another car it certainly would be a Buick."



Dr. J. B. Lawrence, of Harrisburg, Pennsylvania, writes as follows: "This being my fourth Buick car, I give my recommendation of this 1919 model. The other models all speak for themselves as to service, low expense and durability. I look to the Buick as being the leader in the medium price class—in fact, would rather have a Buick than some cars selling for more money. This is one car that gives you a more wonderful value every time there is a slight change in price. If you ever meet a prospect who does not interpret the meaning of Buick, send him to me"



Hon. M. E. Bailey, Mayor of Mt. Sterling, Illinois, writes: "After driving this Buick Six from the factory, through several different states and under all kinds of road conditions, I purchased this car upon my arrival home and I am very highly pleased with it"

The Eldridge Buick Company, of Seattle, have spent a great deal of time and thought in developing the service facilities of their establishment, and the crowning touch is their new service car, shown here. An unsightly "tow-bus" will undoubtedly answer most of the purposes for which this car is used, but the attractive appearance of the car has a distinct value, in that wherever it appears it impresses people with the pride that "Pop" Eldridge takes in maintaining his owner-service at a high standard



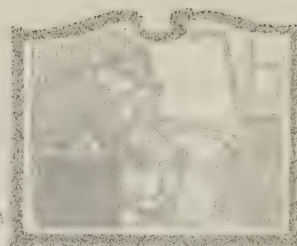
Mrs. A. G. Dohm, of Carlinville, Illinois, writes: "The Buick Model E-Six-46 which I purchased of you last February has given me uninterrupted service. Besides being a great source of pleasure to me, my husband and I use it for business trips to nearby towns. This car is the easiest to operate of any car I have ever owned"



The establishment of Messrs. Rowe & Company, Buick dealers in Rangoon, Burma, India, as it appeared while decorated in honor of the Allied victory. This establishment is an excellent example of the solid foundation upon which the distribution of Buick cars is based abroad, as well as at home. Business men of the highest calibre have been selected everywhere, with particular reference to their ability and disposition to render high grade service



Keeping the Car in Trim



Shifting Gears

ONE of the marks of a good driver is the manner in which he handles the gear shifting lever. Of course the design of the clutch and transmission has a great deal to do with easy gear shifting, but even with these advantages a certain amount of practice is necessary in order to shift the gears deftly, without noise or clashing. This clashing is caused by the outer ends of the gear teeth striking each other instead of meshing as they should, with the result that the transmission gears are sometimes injured by constant improper shifting of gears.

A clear understanding of what happens in the process of gear shifting will enable the driver to master the process in a very short time.

The transmission is made up of a series of gears, mounted on the main shaft and the countershaft, with the idler gear mounted on the transmission case. The first speed, second speed and reverse combinations are simply three sets of reduction gears with various ratios, to give the motor a greater leverage against the driving mechanism when required. Third speed is direct drive, which means that the propeller shaft revolves at the same rate of speed as the motor crankshaft. The various gears are brought into play by moving the gear shifting lever to the proper positions.

When the clutch pedal is pressed all the way down the power of the motor is disconnected from the transmission system, which releases the pressure of the gear teeth against each other and makes it possible to shift the gears easily. Also, when the gear shifting lever is in neutral position, the power is disconnected from the rear driving mechanism, because none of the transmission gears are in mesh.

The lower end of the gear shifting lever connects with the gear shifting forks, which are so arranged as to push the gears forward and backward on the square main shaft in order to make the different gear combinations.

The whole theory of gear shifting may be summed up in the statement that the two gears about to be meshed should be revolving slowly and as nearly as possible at the same rate of speed. If one is revolving much faster than the other it is difficult to shift without clashing. In the patented Buick disc clutch, all of the heavy rotating parts of the clutch are carried by the flywheel and the light ones by the transmission, so that the gears slow down very quickly. This is a wonderful aid in shifting gears.

It is a mistake, for the above reasons, to let the car gain too great a speed before shifting into a higher combination. The following method will be found to give good results:

With the throttle closed and the spark lever about half way down the quadrant, so that the engine idles slowly, throw out the clutch and put the gear shifting lever in first speed position. Engage the clutch slowly, at the same time pressing down on the accelerator pedal gradually. Let the car attain a speed of about four or five miles an hour and then throw out the clutch, removing the right foot entirely from the accelerator pedal. Push the lever slightly forward into neutral position, then clear to the left and forward into second speed. Let the clutch in gently as before and accelerate the speed of the car to about eight or ten miles an hour, when the clutch should again be disengaged, the foot removed from the accelerator and the gear shifting lever pulled straight back into high speed position.

All of these motions should be made deliberately, without haste. Most drivers are in too much of a hurry to make the shift, but smoother shifting will result if, after moving the lever from first or second speed, it is allowed to remain in neutral for a second before pushing it to the higher speed position. The driver will acquire this knack much quicker if he will cultivate the habit of not gripping the shifting lever too firmly. For example, shifting from second to high speed is a straight backward movement. By moving the lever backward with the finger tips, the driver can actually feel when the gears are rotating at proper speed to mesh perfectly. With the lever gripped tightly this is not possible.

These rules will apply to all ordinary driving on fairly good and level roads, where the car does not lose momentum quickly. But on an up grade or in heavy pulling of any kind where the car slows down the instant the power is shut off, the shift should be made quickly and firmly from all speeds.

Shifting from a high speed to a lower speed is practically the reverse of the motions described above, except in the matter of handling the throttle. The principal thing is to make the shift as firmly and quickly as possible, so as not to let the gears slow down. It is also well to press the clutch pedal down only far enough to barely release the clutch.

Never attempt to reverse the car until it has come to a full stop, nor to shift from reverse into forward speed until the car is standing still, because this action throws an enormous strain on the mechanism.

These rules, if observed, soon become as automatic as the act of walking, and the driver who observes them will have no difficulty in shifting gears on Buick cars with perfect ease and silence.

THE BOOMERANG

Continued from page four

Mrs. Bence changed her best black silk to a striped calico and began to clear away the remains of the wedding feast. Her mouth set in a stern, hard line as she surveyed the pile of dirty dishes and the disordered kitchen.

"It beats all! However Min come to be so clumsy, I dunno! An' you, Davy, can't you do nothin' but set there with a face on you that'd frizzle eggs?" Martha Bence slapped a pan viciously down into the sink, turned on a jet of boiling water from the spout of the singing kettle and attacked a pile of greasy plates. "Just you git a towel an' dry some of them dishes."

"Ain't I got enough to do, without waitin' on anybody? Hand an' foot, I s'pose, runnin' up an' down them stairs a hundred times a day. I hope to goodness she won't be laid up more'n a day or so."

The doctor's heavy footsteps descended the stairs; his stout figure bulked in the doorway.

"Is she bad hurt, doc?" asked David. "Poor Min; that was a bad fall she got."

The doctor cleared his throat; something in his face made Martha Bence catch her hands to her flat breast.

"Well?" she demanded sharply. "Speak up, can't you? How long's she goin' to lie up there fer me to wait on? When's she comin' down again?"

The doctor coughed, cleared his throat again.

"She isn't goin' to come down again, Marthy," he said simply. "She struck her spine on every step of those stairs. She'll be a helpless cripple as long as she lives."

She lived for thirty years.

THE END

IT IS not at all uncommon to find the Buick the most popular car in a community, but the greatest significance attaches to this popularity when we find the majority of the members of a certain business or profession driving Buick cars almost to the exclusion of other makes. For in this case the Buick is chosen purely because of its serviceability.

In Clarksburg, West Virginia, there are 38 physicians who own motor cars. Of this number, 24 own Buicks. Their names follow:

NAME	MODEL
Dr. C. T. Arnett, 121 Hartland Ave.	E-15
Dr. J. J. Cranwell, 612 W. Pike St.	E-19
Dr. W. B. Conaway, Virginia St.	D-45
Dr. S. L. Cherry, St. Mary Hospital. (In Army Service)	E-34
Dr. E. N. Flowers, 162 W. Pike St.	D-45
Dr. W. T. Goeke, Gore Bldg.	H-45
Dr. B. I. Hudkins, St. Mary Hospital	E-44
Dr. C. W. Halterman, 283 Clay St.	D-45
Dr. E. A. Hill, 165 Harrison St.	D-45
Dr. R. A. Haynes, 165 Oak St.	D-46
Dr. C. M. Kessler, Clifford Bldg.	E-44
Dr. R. B. Lynch	H-44
Dr. R. J. Nutter, Loundes Bldg.	H-45
Dr. Lynn Osborn, Pike St. (In Army Service)	D-44
Dr. C. R. Ogden, 208 E. Main St.	D-45
Dr. A. T. Post, 232 Daisy St.	E-44 and E-45
Dr. J. B. Payne, Baker and Duff St.	D-45
Dr. H. E. Sloan, 359 Lee St.	D-45
Dr. C. N. Slater, 215 W. Pike St.	D-44
Dr. P. C. Showalter, 158 W. Main St.	D-45
Dr. B. F. Shuttleworth, 126 W. Main St.	E-45
Dr. J. E. Wilson, 121 Hartland Ave.	D-45
Dr. J. B. Winfield, 159 Oak St.	H-45
Dr. E. F. Wehner, 119 South Oak St.	D-44

Perfect Satisfaction

MR. ALBION FELKER, of Lowell, Massachusetts, writes: "I wish to say that I am still using my 1916 Buick car which was my original purchase from your company, and after having run the car about 16,000 miles it is in excellent condition. I have never been obliged to spend any money for new parts and have gotten an average of 18 miles to the gallon on gasoline. As soon as I am in the market for a new car it will certainly be a Buick as my car has given me perfect satisfaction."

Has Owned Four Buicks

I READ your Buick Bulletin every month," writes Mr. J. D. Furtick, Jr., of Rienzi, Mississippi. "and as I have owned four different models of the Buick Car, I think it is time for me to tell you what I think of the Buick Car. I think they are the best on the market for the price, as I have owned seven different kinds of cars beside the Buick in the last seven years. My last car was a Buick 6-D-45 and I have made it do what other cars failed to accomplish. I can get 18 miles to the gallon over most any kind of road. I claim to be some driver myself, and I believe when I get in a car I can tell in a little while what it is."

"You sure have it right when you said, 'When better automobiles are built, Buick will build them.' So, if any time you have anyone in doubt about the Buick car, send them to me, as I have the facts about it."

"I could tell you about some extra big trips I have taken, but it will take up too much time for you to read, so as long as you make the Buick Car, please send me the Bulletin, and I will be ready before long for one of your new 1919 Buick Cars, as I have just sold my 1918 car."

A PACIFIC COAST PIONEER



This 1905 Model was the first Buick car sold on the Pacific Coast

THE first Buick car to be sold on the Pacific Coast was purchased by Dr. A. J. Villain from C. S. Howard, who is still the Buick distributor in California. This was in 1905, and the car is still in running condition.

These are the bare facts in connection with this Buick pioneer. It has been displayed at various motor car exhibits on the coast during the past few years, and its quaint design never fails to attract a throng of people who can still remember the time when it was in the height of style and was remarked for its appearance as well as for its performance.

But a critical inspection of the old car gradually develops a new thought in connection with it. It is like looking at an old portrait, where the first feeling of amusement at the old-fashioned dress of the sitter is soon superseded by admiration of the lines of strength and character in the face.

The frame of this old Buick car is without a drop and the body sets up high in the air. But there is no sign of sagging and apparently the frame is as rigid as ever. The upholstery is done in the old tufted style, but it is in remarkably fine condition. Springs, transmission, axles, wheels, steering gear and all other mechanical units are still serviceable, and there is no question but that if the car were to be overhauled somewhat, it is still good for many thousands of miles of service.

When you lift the hood, you see one of the early Buick Valve-in-Head motors. Compared with the refined Buick motor of today, it looks as odd as does the design of the car contrasted with that of a big Model 49. But the point is that through all these years, and for many years previous, the Buick Motor Company has not departed from the Valve-in-Head principle of motor design. And it is the development of the possibilities of this principle of design that has earned for Buick cars their enviable reputation for power, economy and long life.

In discussing internal combustion motors, it is first necessary to get one fact firmly fixed in mind, namely—that they are all heat engines. In other words, they derive their power by converting the fuel used in operating them into heat, and it is the expansion of the heated gases resulting from each explosion in the cylinders that supplies the impulses necessary to run the motors.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be. In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water-jacketed space there is in a motor, the greater the thermal (heat) efficiency will be, because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases both inlet and exhaust valves form a part of the combustion chamber, where the heat is greatest, and in consequence it is necessary to water-jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. This pocket is water-jacketed. In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water-jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water-jacketed, it follows that the Valve-in-Head type affords the minimum of water-jacketed space that is possible to be secured for any given size of cylinder.

Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water-jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the big valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is more perfect in the Buick motor because the mixture is purer.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other type of motor, a quicker ignition of the charge and a smaller loss of heat through the water jackets. The sum of these advantages in design is more power with less gasoline consumption.

To these characteristics of design is added in the Buick motor the fruit of nearly twenty years' experience in building Valve-in-Head motors exclusively, and in improving the design consistently every season throughout that period.

Buicks Endorsed by Tourists

Loops the Far West

THE Buick Bulletin is here again," writes Mr. William Hoss, of Portland, Oregon, "and after reading over the accounts of the various trips made in Buick cars, I believe that the following synopsis of my trip made last summer in company with another young man, may be of some interest to you. The route led through Oregon, California, Nevada, Utah, Idaho, Montana and Washington. A good part of this trip was over indifferent roads and a large percentage of it was over rough and steep mountains.

"On June first I purchased a light Buick Four from your local agent here and after driving it 800 miles started for San Francisco, via the Pacific Highway, making it in four days. From San Francisco we headed south over the coast route to Los Angeles, where we made a two weeks' visit. From Riverside we headed north to the Yosemite National Park. We spent two days in seeing the park, and right here had a fine opportunity for testing the car, as some of the hills were indeed steep enough to make any machine hump. We left the park through the Tioga Pass and proceeded east to Lake Tahoe, Carson City and Reno. We then crossed the desert to Salt Lake City. During our trip across the desert we encountered many storms and washouts, but not once did our car refuse to go and paid no attention to the deep sand and burning sun. From Salt Lake City we headed for the Yellowstone National Park and spent several days in traveling through the park. We left the park at Granger and directed our course to Billings, and then started back for Portland, going by way of Bozeman, Wallace, Spokane, Seattle, Tacoma, making a loop trip of a little over six thousand miles.

"I am more than pleased with the car. In fact, I am proud of it. This trip was surely one which would test the merits of any car and the Buick came out with flying colors. Up to date the car has run a little over 12,000 miles and has not caused me any trouble whatsoever and is still running as well as when I first purchased it, if not better. I have been the owner of several other cars but can honestly say that I consider the Buick paramount."

Makes Three Long Trips

I SEE some very interesting articles in the Buick Bulletin," writes Mr. R. C. Huntsberger, of Middletown, Ohio, "of Buick drivers' experiences in cross country touring. I have had three very interesting vacation trips in Buick cars. My first was in a Model 40, which I bought second-hand in the fall of 1916, having very fine results in spite of the fact that I had only driven a car about eight weeks.

"I drove from Middletown to Columbus, Alliance, Pittsburgh, Johnstown, Harrisburg and returned over the Lincoln Highway to Pittsburgh, thence to Steubenville, Wheeling and Columbus to Middletown—21 days' vacation with no mechanical trouble at all.

"In December, 1916, I bought a D-Six-45. I used the car every day during the winter, in all kinds of weather, and in June, 1917, left Middletown on a three weeks' vacation. My wife and I drove the first day to Detroit, back

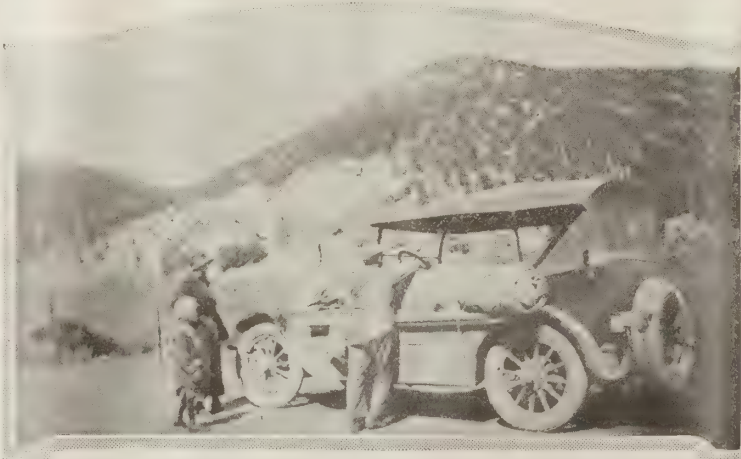


This Buick car is owned by the Department of the Interior, National Park Service. Mr. Stephen Mather, Superintendent of National Parks, is at the wheel, beside Mr. Herbert W. Gleason. Captain Beimore Brown is in the rear seat on the right, with Mr. D. L. Reaburn at the left. The picture was taken in Rainier National Park.

to Alliance and then followed much the same route as on the previous trip—21 days, 2,275 miles, two punctures and one blowout, 17½ miles to the gallon of gas.

"I drove the same car all of 1917 except six days, three of which I did a little adjusting myself, cleaned the crankcase and looked the car over ready for 1918. Drove the car all winter—and it was a very hard winter. In June, 1918, I started on a three weeks' trip, about the same as that taken in 1917. Trouble, 25 minutes spent on loose connection on the ignition switch.

"Five of the original spark plugs are in the engine—valves ground twice. The car has never been back to Shettler or any other



Mr. Roy Sheidler and party in New Mexico

garage since I have owned it, and it has run about 14,000 miles. One of my neighbors asked me a few days ago when I had the repairs made on my car, for he sees me in my everyday routine duties. My reply was that I did not need garage repairs on my car. Hoping this may be of interest to you, I remain a Buick Booster.

"P. S. Automobile vacations are the only kind worth while when you have the right car."

Muncie to Los Angeles

I HAVE been reading articles on tours in the Buick Bulletin," writes Mr. Roy Sheidler, of Muncie, Indiana. "A party of five, including myself, left Muncie September 16, in my Buick Six for Los Angeles. The trip was made in 19 days, with one puncture covering the tire trouble and no engine trouble at all. The

total weight of the car was 4,600 pounds.

"We took the Santa Fe route, going by St. Louis, Kansas City and Albuquerque, a distance of 2,633 miles, using 172 gallons of gas, or an average of 15½ miles to the gallon.

"The roads through Illinois and Missouri were extremely bad. At one place near St. Charles, Missouri, the mud was hub deep. There we found a car and a large truck stalled, but as is always the case the Buick takes you through places where other cars fail.

"The Buick way of traveling is less expensive than the railroad and much more pleasant. For perfect satisfaction, buy a Valve-in-Head motor car."

Fine Gasoline Mileage

JUST a word of praise for my Buick Model E-Six-46," writes Mr. J. Alfred Johnson, of Aledo, Illinois. "I purchased it in April, 1918, and made a trip to Redwood Falls, Minnesota. On my return trip I kept an accurate account of the gasoline used.

"The trip home included cities of Mankato, Wauseka, Albert Lea, Mason City, Waterloo, Cedar Rapids, Iowa City, Davenport and Rock Island, with stops in each and many other smaller places.

"Used just 24 gallons of gasoline on the trip—an average of almost 20 miles per gallon. Would have made much better mileage had it not been for the heavy traffic, which of course cuts down the mileage.

"Have had several cars in my life and the Buick suits me the best of anything I ever had. Cannot speak too highly of the Buick."

Long Trip—No Expense

MR. R. FAUSTMAN, of York, Nebraska, is the owner of a Buick Model D-Six-45, purchased about 20 months ago. "I cannot prize the car too highly," he writes. "With five in the car we drove from York to Sterling, Colorado, which is 340 miles from York, with only one filling of the gasoline tank, which is 16 gallons. From the Rocky Mountains we went on through Yellowstone National Park, where we climbed Mt. Washburn, which is 10,000 feet above sea level. The car was driven 4,500 miles on this trip and the total to date is 8,000 miles. The Buick was ready any time we were.

"The expense on the car so far is \$1.80. Still have the same tires that were on when I bought it. There is no better car for the money anywhere."

"Every Farmer Needs a Buick"

I WANT to thank you," writes Mr. C. W. Shumaker, of Galion, Ohio, "for the Buick Bulletin which I am getting once a month. Can hardly wait until it comes.

"I was up to Flint, Michigan, and drove my 1917 Buick car home two years ago, when I bought it, and I want to tell you she is some car for power and speed.

"You can get miles out of a gallon of gasoline and don't have much tire trouble.

"I think every farmer ought to have a Buick car. I can't get along without mine, and the next car that I purchase will be a Buick."



Town and Country are United by the Motor Car

The contractor who builds the farmer's silo must have a car to keep in touch with his various undertakings. The farmer uses his car as a connecting link between his work and the things he needs to carry on his work—between his produce and his market.

Buick Valve-in-Head power, economy and long life play a leading part in service of this description, because these attributes are essential where quick trips must be made regardless of distance, road or weather conditions, and where upkeep expense is an important item.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars

BRANCHES IN ALL PRINCIPAL CITIES

DEALERS EVERYWHERE



Buick



EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK

A motor car, to be completely satisfactory, must have a liberal quota of good looks, convenience and even a certain amount of luxury about it.

On the other hand, these attributes are entirely discounted for any purpose for which a motor car is used, unless they are supplemented by smooth working mechanical units that insure dependable service. In the latest Buick models,

these features have been combined to an unusual degree, insuring a breadth of usefulness that fits them for both business and family use. Nearly twenty years have been devoted to bringing Buick cars up to their present standard of excellence.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

*Pioneer Builders of Valve-in-Head Motor Cars
Branches in all Principal Cities :: Dealers Everywhere*

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Thanatopsis

To him who in the love of Nature holds
Communion with her visible forms, she speaks
A various language; for his gayer hours
She has a voice of gladness, and a smile

And eloquence of beauty, and she glides
Into his darker musings, with a mild
And healing sympathy, that steals away
Their sharpness, ere he is aware.

—William Cullen Bryant

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MENDING THE CLOCK

By
J. M. BARRIE

IT IS a little American clock, which I got as a present about two years ago. The donor told me it cost half a guinea, but on inquiry at the shop where it was bought (this is what I always do when I get a present), I learned that the real price was four-and-sixpence. Up to this time I had been hesitating about buying a stand for it, but after that I determined not to do so. Since I got it, it has stood on my study mantel-piece, except once or twice at first, when its loud tick compelled me to wrap it up in flannel and bury it in the bottom of the drawer. Until a fortnight ago my clock went beautifully, and I have a feeling that had we treated it a little less hardly it would have continued to go well. One night a fortnight ago it stopped as if under the impression that I had forgotten to wind it up. I wound it up as far as it was possible, but after going for an hour it stopped again. Then I shook it, and it went for five minutes. I strode into another room to ask who had been meddling with my clock, but no one had touched it. When I came back it was going again, but as soon as I sat down it stopped. I shook my fist at it, which terrified it into going for half a minute, and then it went creak, creak, like a clock in pain. The last thing it did before stopping finally was to strike nineteen.

For two days I left my clock severely alone, nor would I ever have annoyed myself with the thing had it not been for my visitors. I have a soul above mechanics, but when these visitors saw that my clock had stopped they expressed surprise at my not mending it. How different I must be, they said, from my brother, who had a passion for making himself generally useful. If the clock had been his he would have had it to pieces and put it right within the hour. I pointed out that my mind was so full of weightier matters that I could not condescend to clocks, but they had not the brains to see that

what prevented my mending the clock was not incapacity, but want of desire to do so. This has ever been the worry of my life, that, because I don't do certain things, people take it for granted that I can't do them. I took no prizes at school or college, but you entirely misunderstand me if you think that that was because I could not take them. The fact is that I had always a contempt for prizes and prizemen, and I have ever been one of the men who gather statistics to prove that it is the boy who sat at the foot of the class that makes his name in after life. I was that boy, and though I have not made my mark in life as yet, I would have done it had I wanted to do so as easily as I could mend a clock. My visitors, judging me by themselves, would not follow this argument, though I have given expression to it in their presence many times, and they were so ridiculous as to say it was a pity that my brother did not happen to be at home.

"Why, what do I need him for?" I asked irritably.

"To mend the clock," they replied, and all the answer I made to them was that if I wanted the clock mended I would mend it myself.

"But you don't know the way," they said.

"Do you really think," I asked them, "that I am the kind of man to be beaten by a little American clock?"

They replied that that was their belief, at which I coldly changed the subject.

"Are you really going to attempt it?" they asked, as they departed.

"Not I," I said, "I have other things to do."

Nevertheless, the way they flung my brother at me annoyed me, and I returned straight from the door to the study to mend the clock. It amused me to picture their chagrin when they dropped in the next night and found my clock going beautifully. "Who mended it?" I fancied them asking, and I could not help practising the careless reply, "Oh, I mended it myself." Then I took my clock in my hands to examine it.

The annoying thing, to begin with, was that there seemed to be no way in. The clock was practically hermetically sealed, for though the back shook a little when I thumped it on my knee, I could see quite well that the back would not come off unless I broke the mainspring. I examined the clock carefully round and round, but to open the thing was as impossible as to get into an egg without clipping the shell. I twisted and twirled it, but nothing would move. Then I raged at the idiots who made clocks that would not open. My mother came in about that time to ask how I was getting on.

"Getting on with what?" I asked.

"With the clock," she said.

"The clock," I growled, "is nothing to me," for it irritated me to hear her insinuating that I had been foiled.

"But I thought you were trying to mend it," she said.

"Not at all," I replied. "I have something else to do."

"What a pity," she said, "that Andrew is not here."

Andrew is the brother they are always flinging at me.

"He could have done nothing," I retorted, "for the asses made this clock not to open."

"I'm sure it opens," my mother said.

"Why should you be sure?" I asked, fiercely.

"Because," she explained, "I never saw or heard of a clock that doesn't open."

"Then," I snarled, "you can both see and hear of it now"—and I pointed contemptuously at my clock.

She shook her head as she went out, and as soon as the door shut I hit the clock with my clenched fist, stunning my fourth finger. I

had a presentiment that my mother was right about the clock's opening, and I feared she still labored under the delusion that I had been trying to mend the exasperating thing.

On the following day we had a visit from my friend Summer, and he had scarcely sat down in my study when he jumped up, exclaiming, "Hullo, is that the right time?"

I said to him that the clock had stopped, and he immediately took it on his knees. I looked at him sideways, and saw at once that he was the kind of man who knows about clocks. After shaking it he asked me what was wrong.

"It needs cleaning," I said at a venture, for if I had told him the whole story he might have thought that I did not know how to mend a clock.

"Then you have opened it and examined the works?" he asked, and, not to disappoint him, I said yes.

"If it needs cleaning, why did you not clean it?" was his next question.

I hate inquisitiveness in a man, but I replied that I had not had time to clean it. He turned it round in his hands, and I knew what he was looking for before he said:

"I have never taken an American clock to pieces. Does it open in the ordinary way?"

This took me somewhat aback, but Summer being my guest, had to be answered.

"Well," I said cautiously, "it does and it doesn't."

He looked at it again, and then held it out to me, saying: "You had better open it yourself, seeing that you know the way."

There was a clock in the next room, and such a silence was there in my study after that remark that I could distinctly hear it ticking. "Curiously unsettled weather," I said.

"Very," he answered. "But let me see how you get at the works of the clock."

"The fact is," I said, "that I don't want this clock mended; it ticks so loudly it disturbs me."

"Never mind," Summer said, "about that. I should like to have a look at its internals, and then we can stop it if you want to do so."

Summer talked in a light way, and I was by no means certain whether, once it was set agoing, the clock could be stopped so easily as he thought, but he was evidently determined to get inside.

"It is a curious little clock," I said to him, "a sort of puzzle, indeed, and it took me ten minutes to discover how to open it myself. Suppose you try to find out the way?"

"All right," Summer said, and then he tried to remove the glass.

"The glass doesn't come off, does it?" he said.

"I'm not going to tell you," I replied.

"Stop a bit," said Summer, speaking to himself; "is it the feet that screw out?"

It had never struck me to try the feet, but I said: "Find out for yourself."

I sat watching with more interest than he gave me credit for, and very soon he had both the feet out; then he unscrewed the ring at the top, and then the clock came to pieces.

"I've done it," said Summer.

"Yes," I said, "but you have been a long time about it."

He examined the clock with a practiced eye, and then—

"It doesn't seem to me," he said, "to be requiring cleaning."

A less cautious man than myself would have weakly yielded to the confidence of this assertion, and so have shown that he did not know about clocks.

"Oh, yes, it does," I said in a decisive tone.

"Well," he said, "we had better clean it."

"I can't be bothered cleaning it," I replied, "but, if you like, you can clean it."

"Are they cleaned in the ordinary way, these American clocks?" he asked.

"Well," I said, "they are, and they aren't."

"How should I clean it, then?" he asked.

"Oh, in the ordinary way," I replied.

Summer proceeded to clean it by blowing at the wheels, and after a time he said, "We'll try it now."

"Hullo, it's going."

"Yes," I said, "I put it to rights after you went out."

"How did you do it?" he asked.

"I cleaned it properly," I replied.

As I spoke I was leaning against a mantelpiece, and I heard the clock beginning to make curious sounds. I gave the mantelpiece a shove with my elbow, and the clock went all right again.

Summer had not noticed. He remained in the room for half an hour and all that time I dared not sit down. Had I not gone on shaking the mantelpiece the clock would have stopped at any moment. When he

went at last I fell thankfully in a chair, and the clock had stopped before he was halfway downstairs. I shook it and it went for five minutes, and then stopped. I shook it again, and it went for two minutes. I shook it, and it went for half a minute. I shook it, and it did not go at all.

The day was fine, and my study window stood open. In a passion, I seized hold of that clock and flung it fiercely out into the garden. It struck against a tree, and fell into a flower bed.

Then I stood at a window sneering at it, when suddenly I started. I have mentioned that it has a very loud tick. Surely I heard it ticking. I ran into the garden.

The clock was going again! Concealing it beneath my coat, I brought it back to the study, and since then it has gone beautifully.

Everybody is delighted except Summer, who is naturally a little annoyed.



As I spoke I was leaning against a mantelpiece, and I heard the clock beginning to make curious sounds.

He put it together again and then wound it up, but it would not go.

"There is something else wrong with it," he said.

"We have not cleaned it properly," I explained.

"Clean it yourself," he replied, and flung out of the house.

After he had gone I took up the clock to see how he had opened it; to my surprise it started to go. I laid it down triumphantly. At last I had mended it. When Summer came in an hour afterward he exclaimed—

MY FIRST Buick," writes Mr. C. A. Miller, of Canon City, Colorado, "was a Model D-45, which I purchased for \$1020.00. After driving it for nearly two years, covering 13,000 miles, and, too, with the first set of tires still going, I sold it for \$875.00, the purchaser continuing some 3,000 miles more with the same tires. Being a Buick lover, I purchased another Buick, Model E-45 for \$1425.00. I have driven it almost a year, covering over 5,000 miles, and have just been offered \$1200.00 for it, but it is so free from faults that I have not yet decided to take the price offered. The greater part of my travels were over rocky mountain roads with plenty of rocks, crooks and turns. During last summer, on one trip, I traveled 200 miles in just nine hours, all mountain roads with hundreds of hills and turns.

"This round trip consisted of covering 700 miles without any trouble whatever and after returning home one of my party caused an item to be inserted in our home paper stating that I put my car where a burro could not go.

"Previous to my owning a Buick, I owned and had worn out a higher priced car, but I must admit that for ease of manipulation, reliance, sturdiness, faultlessness, economy, power and long life, I find that the Buick beats them all. Besides, I find that the Buick sells for more second-hand than any other car."

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

MOST motorists are proud of the external cleanliness of their cars. They like to see the fenders and bodies well polished and the nickeled parts clean and bright. On the other hand, many motorists are lax about the cleanliness of parts that are not exposed to view, simply because they assume that such cleanliness does not matter.

But it does matter.

Good automobile housekeeping demands cleanliness that is thorough and extends to the nooks and corners under the hood, around the engine, transmission, brakes and other working parts.

For such cleanliness has a much deeper meaning than the mere satisfaction of having things clean and attractive. It has to do with the life of the car and the continued satisfactory performance of the car.

Viewed in this light, the question of under-the-hood cleanliness takes on a new aspect.

PROBABLY the most neglected part of the average motor car in this respect is the drip pan under the engine. If a little oil is spilled in filling the crankcase, few people will stop to wipe it up. Down it trickles into the drip pan, the first of a series of such overflows to happen as long as the car is in use. But if some of the oil is spilled on the apron, or fender, it is industriously wiped off, simply because it is exposed to view.

Now, the purpose of the drip pan is not to catch oil and dirt. It is put there to protect the engine and other working parts from foreign matter that could otherwise get in from below. When you drive along a country road after or during a rain, mud and water are splashed up unavoidably on the under side of the fenders, body and chassis; and if it were not for the drip pan, these advance agents of rust and abrasion would get into the nooks and corners of the frame, settle around bolts and nuts and some would sooner or later find its way into the working parts.

So the term drip pan is really a misnomer, because it gives the impression that the pan is there to catch oil or anything else that might fall into it. But such substances should not be

allowed to collect in the pan, because permitting them to do so defeats the very purpose for which the pan is designed.

The question naturally arises, What harm will it do to let these things accumulate? Before we attempt to answer the question, let us see what happens.

AFTER the car has been in use for several months, considerable oil has probably been allowed to drop into the pan. At first it spreads out in a film over the surface, and in the act of driving dust settles upon this film, changing it to a sticky, non-drying mud, which process continues in spite of the drain hole in the bottom of the pan.

Sometimes it happens that in cleaning under the hood, a rag or a bit of waste is dropped into the pan. Instead of removing it, the tendency is to let it go, with the result that it may become lodged in the drain hole and stop it up entirely, when the excess oil would have no outlet,

Of course, oil itself is a lubricant and will not damage any of the working parts. But oil mixed with dust and foreign matter that is bound to collect in it is nothing short of an abrasive material and no chances should be taken of getting any of it into the crankcase or any other part of the mechanism. And if the drip pan of a car is permitted to be the gathering place for refuse of this kind, it might as well be left off the car entirely.

The remedy is simple. The drip pan should be cleaned as religiously as the rest of the car. Any overflow of oil or gasoline should be wiped up before it gets a chance to run down into the pan. See that the drain hole in the pan is not only not stopped up, but has no accumulation around it that will interfere with the free draining of the pan.

THE design of the pan is such that it can be removed for an occasional cleaning, and no matter for what purpose it is removed, it should never be replaced without first cleaning it thoroughly. There is nothing more unpleasant to the average person than working about under the hood of a car where everything is covered with grease and dirt. For this reason, many people

make a practice of cleaning the motor off occasionally with gasoline. This should never be done—always use kerosene. Then, instead of finishing the job, they will let the dirty oil drop into the pan and stay there. A few minutes longer would suffice to rinse out the pan as well. But you can look under the hood of many cars and find the accumulation of oil and dust so thick that it is impossible to touch any part without soiling the hands or clothing, in spite of the fact that the exterior of the car is clean and inviting.

The best way, and the easiest way to keep the drip pan and all other parts under the hood clean is to be regular about it. Don't wait for a lot of foreign substance to gather and then make one job of it. But whenever the car is lubricated or washed, see to it that a little interior cleaning is done as well. Don't permit overflows of oil to go unnoticed. The car owner who buys his supplies at a filling station should see to it that the attendant wipes up any oil that he may spill, and if this practice is followed regularly there will be no chance for the collection of such refuse in the drip pan.

AS stated above, the pan may be removed for cleaning if it has been allowed to go for a considerable time without attention. A stiff brush dipped in kerosene oil will remove the grease and dirt quickly if it is not too thick. If it is, first scrape off the thickest part with a piece of wood or some convenient instrument and then apply the kerosene with the brush. While the pan is off, it is well to go over the motor in the same way, at the same time cleaning the corners around the frame, etc.

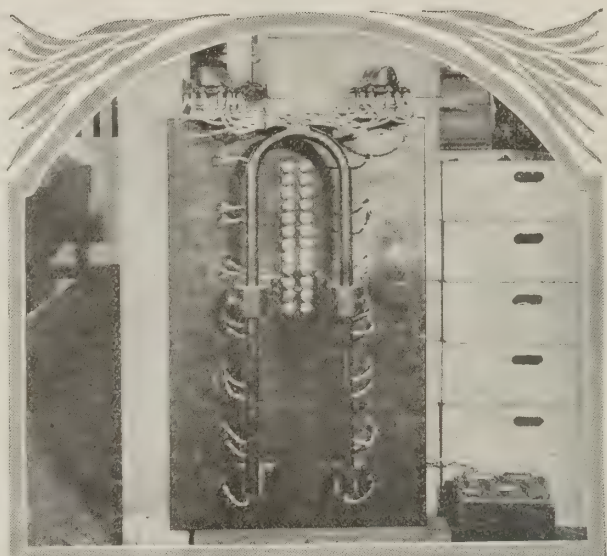
In this way the owner is assured of perfect cleanliness that is not in any sense a detail, but is really important in the everyday service of his car and makes it that much more fire proof.

Not enough emphasis has been laid on the question of keeping the automobile clean, and we can't help thinking, in this connection, of the old retired sailor who used to tidy up his cabin by sweeping the dust behind the door. When the pile got big enough he would gather it up in a dust pan and throw it out. This method suited him all right, but it wasn't considered very good housekeeping. And it isn't good automobile housekeeping, either.

Testing the Liberty Motor



Before the ignition apparatus was assembled on the Liberty motors, it was given a number of tests to see that everything was in perfect working order. This view shows one of the specially designed electrical devices for the purpose



This is another device for testing Liberty motor ignition apparatus. Note the twenty-four small electric light bulbs which light in turn to show the distribution of current

It must again be emphasized that all operations in connection with the building of Liberty motors were as secret as they were thorough. All manufacturing departments were screened off, the employees furnished with special passes and extra watchmen stationed at the entrances and exits to see that none but the proper persons could gain admittance. The ordinary Buick passes were not recognized in the aircraft departments.

As the motors grew to completion, the necessity for secrecy grew greater, and this need, coupled with the fact that the proper testing of Liberty motors required a great deal of space and much special equipment, made it necessary to build a separate test field for this work.

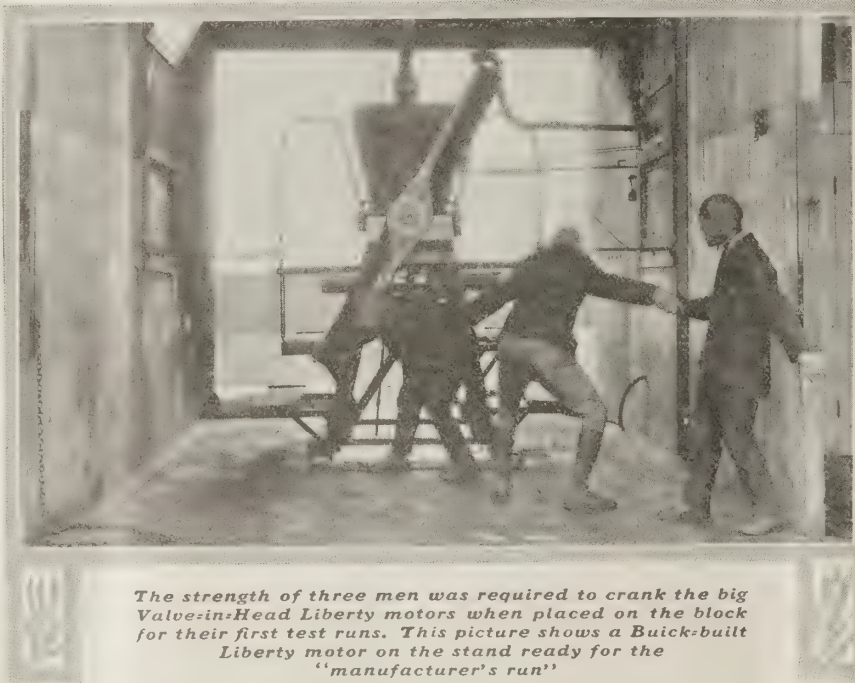
The Liberty Motor test field is 690 feet long and 675 feet wide.

The entire field is surrounded by a tight board fence six feet high, above which are three rows of double strand barbed wire. One hundred watt electric lamps of the hood design are placed above this fence about two hundred feet apart. At each corner of the field and raised above the fence are small guardhouses, in which armed watchmen were stationed. A watchman's house is also located at the employees' entrance and another at the opening where the railroad spur enters the field.

The main building is 590 feet long and 124 feet wide. The railroad track runs beside this building, convenient to the loading dock, which is 12 feet wide and covered. This building contains both government and factory offices, as well as all necessary working conveniences, such as stock rooms, electrical installation room, bays, etc.

Two rows of test tunnels are located west of the main building, twenty-four tunnels in all, complete with observers' rooms and piped for gasoline, oil and water. Each tunnel is 12 feet wide, 22 feet long and 12 feet high, with an engine stand that supports the engine five feet above the floor, ten feet from the front of the tunnel. A chain fall on a track is used for lifting the engine up and down. A mirror properly mounted gives the observer full view of both sides of the motor at once, and two 100 watt electric lights furnish illumination.

In the observer's room is an instrument board containing the



The strength of three men was required to crank the big Valve-in-Head Liberty motors when placed on the block for their first test runs. This picture shows a Buick-built Liberty motor on the stand ready for the "manufacturer's run"

central switches, each controlling one distributor on the engine. The board also carries an ammeter, clock, oil and gasoline pressure gauges, oil outlet, water inlet and water outlet, temperature gauges and a tachometer. To the right of the board is a water by-pass valve, controlling the temperature of the water. There are also two two-gallon tanks, one for testing gasoline consumption and the other for oil. All oil entering the engine must pass through this tank. Both tanks have graduated gauge glasses.

East of the tunnels is a box containing a registering thermograph and barograph.

West of the first row of tunnels on a sixty foot tower is a 25,000-gallon water supply tank, with a water pump to the south. The pump house contains a pump capable of delivering 2,000 gallons of water per minute from the well

to the storage tank. From the tank it is piped to the tunnels for cooling the motors and to the different parts of the field for fire protection.

The pump house also contains an automatic rotary pump which forces oil from the 1800 gallon supply tank to the tunnels through a 4-inch pipe under approximately 30 pounds pressure.

South of the pump house are three 10,000-gallon gasoline storage tanks. From these tanks the gasoline is pumped to the second story of the oil house and is fed by gravity to the tunnel operating rooms under 3½ pounds pressure.

West of the new addition to the main building are 26 tunnels and a wash house, built to take care of the Liberty 8-cylinder motors.

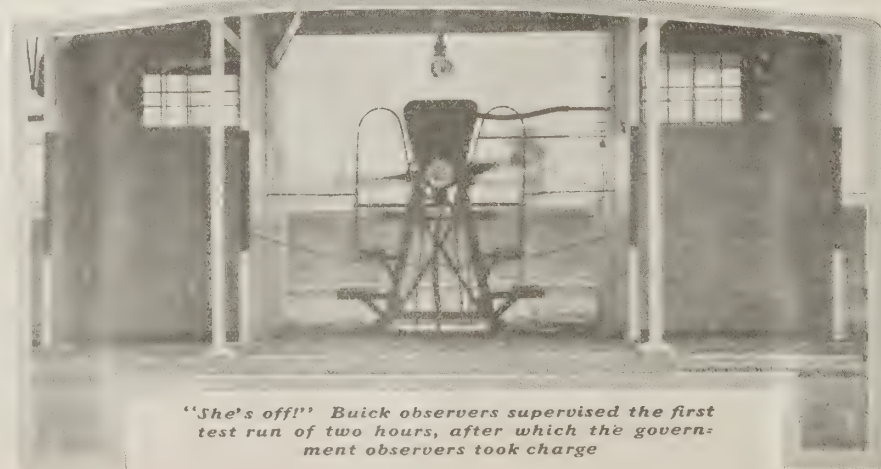
East of the main building is a boiler house, 28 x 50 feet, containing a boiler and an air compressor, the latter delivering air at 70 pounds pressure to all parts of the field and shop. The steam is used for heating and for cooking purposes in the restaurant. An addition 50 feet square to the boiler house was in course of construction when the armistice was signed.

South of the boiler house is a small house containing a rotary pump for pumping the gasoline from the tank cars to the storage tanks.

The restaurant is 50 feet wide and 92 feet long, with a dining room capable of seating 300 persons. All buildings are approached by concrete walks.

From this description it will be seen that every convenience and facility was provided for the rigid tests given to Liberty motors. The scientific apparatus installed was all of the highest order and enabled a perfect check to be obtained upon the performance and power of every motor built.

The motors were built up complete in the assembly department with the exception of the ignition apparatus and synchronizer. After they passed the final inspection, they were placed on motor trucks, carried to the test field and lifted by means of chain falls to specially constructed stands for inspection. These stands were made of angle iron and fitted with a device operated by a hand crank so that one man could easily turn the big motors



"She's off!" Buick observers supervised the first test run of two hours, after which the government observers took charge

to any desired position for inspection. After inspection, the motors were run to the ignition room on electric floor trucks with elevating crane attachments.

Some very ingenious apparatus was used in checking and timing the ignition apparatus, and as soon as the electrical work was finished and checked, the motors were taken to the test sheds.

A good idea of the thoroughness of the tests given is obtained from the description of the equipment given at the beginning of this article. As soon as the motors were mounted on the stands in the "tunnels," club type propellers carefully calibrated were attached. The object of this was to accurately determine the horsepower of each individual motor. The tunnels were uniform in size and shape to control the volume of air from the propellers, and the resistance of the propeller as it revolved at any given rate of speed was so perfectly gauged that the horsepower could be figured out with certainty.

The tests themselves were very spectacular. It required the strength of three men to crank the motors by means of the propeller blades, and as the motors were run without mufflers of any kind the roar of the twelve big cylinders was almost deafening. At a distance of two or three hundred feet from the tunnels the rush of air from the propellers was tremendous and made the spectator either remove or hold tightly to his hat. The big chains hanging from the chain falls were whipped about in the wind



The lower picture shows the arrangement of the testing "tunnels," together with the location of the observers' rooms. The insert shows the interior of an observer's room



The "tear-down" floor. In the immediate foreground is a disassembling "bay," with specially arranged racks and benches for holding the parts during inspection



After the motors were torn down, following the first government endurance run, they were again built up by skilled mechanics

like so many pieces of clotheslines and it was found necessary to sod the ground in front of the tunnels to keep dust and sand from being sucked into them.

The first test was known as the manufacturer's run. It lasted for two hours and was conducted under the supervision of the Buick observers. When this test had been satisfactorily completed, it was immediately followed by a two-hour endurance test, supervised by the government observers.

After the endurance run the engines were taken to the washroom and washed with gasoline applied under pressure. Returning to the ignition room, the

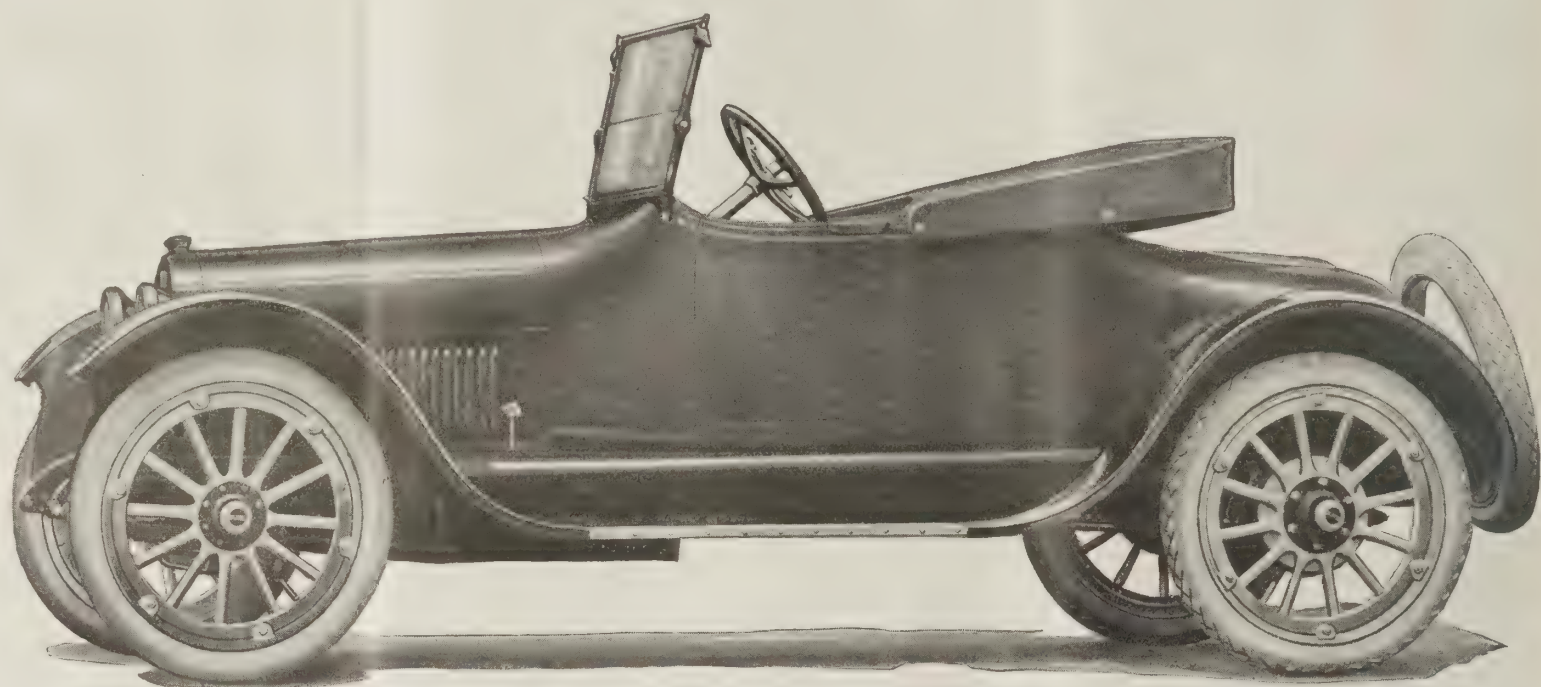
ignition apparatus was removed and the engines taken to the tear-down floor and completely disassembled. If any vital parts required replacing

the motors were given a two-hour re-test, after which they were again torn down and inspected. When no re-test was necessary, the motors were built up, inspected and given a final test of one hour. They were then washed again, given a minute inspection and when found O.K. were marked with a government inspection stamp. A United States Signal Corps number was then given each motor, at which time they became the property of the United States Government.



Here is an all-American airplane, from fuselage to tires. This airplane is equipped with a Buick-built Liberty motor and was driven from Detroit to Flint to show the Buick motor builders the practical application of their work in winning the war

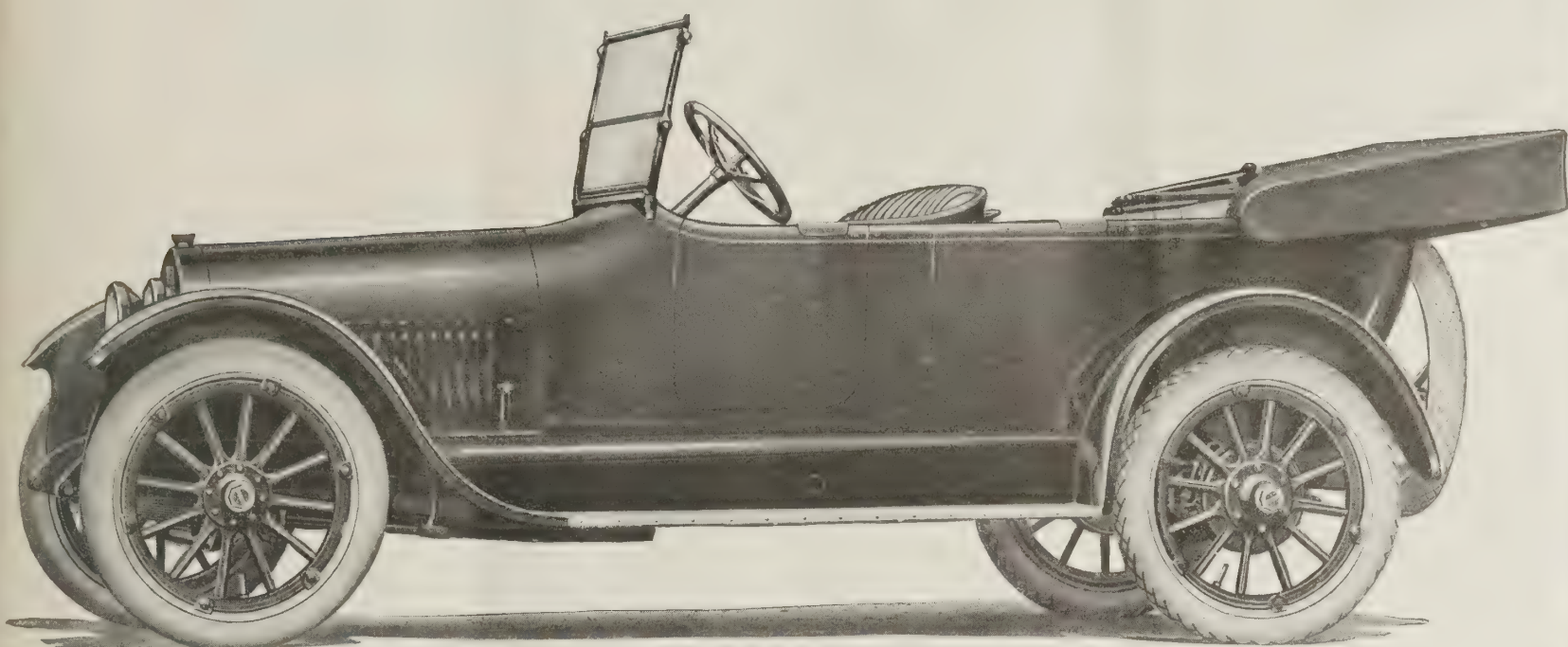
The Six Buick Models Provided



The Buick Model 11 Six-44 Three Passenger

EXPERIENCED motorists form the vast majority of Buick purchasers, and investigation shows that their selection is almost invariably made because the Buick car meets their ideas as to mechanical design and serviceability. So, as a general rule, Buick cars are *bought* rather than *sold*, the purchaser making his selection from among the six different body types, each fitted with the same Buick Valve-in-Head motor and mechanical features.

e a Wide Range of Selection



AMONG the open models, the Buick three- and five-passenger cars make a wide appeal because they fulfill the requirements of a large majority of people, both for business and family use. These cars, in addition to having surplus power, endurance and capacity for service, are fitted with every convenience for both passengers and driver and may be operated with perfect satisfaction by both men and women drivers in all climates.



Dr. Peaslee, Auburn

DOWN EAST, when folk speak of the "Twin Cities," they mean Auburn and Lewiston, Maine. There is considerable rivalry between these two bustling communities, but they are of one mind on the subject of motor cars. For example, the physicians there are almost unanimously in favor of Buick cars for professional and family use. An interesting point in connection with the thirteen Twin City physicians pictured here is the fact that among them they own 27 cars, varying in type from open Roadsters to seven-passenger Sedans. This illustrates graphically the versatility of Buick cars in meeting the requirements of medical men every day, year in and year out.



Gard W. Twaddle, M. D., Auburn



Ralph A. Goodwin, M. D., Auburn



Daniel A. Barrell, M. D., Auburn



Dr. Charles Cunningham, Auburn





Dr. Duprex, Lewiston



Ray N. Randall, M. D., Lewiston



Wallace E. Webber, M. D., Lewiston



William H. Hawkins, M. D., Lewiston



Ernest V. Call, M. D., Lewiston



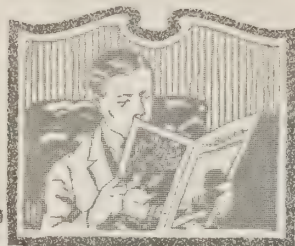
Dr. William Shaffers, Lewiston



William J. Fahey, M. D., Lewiston

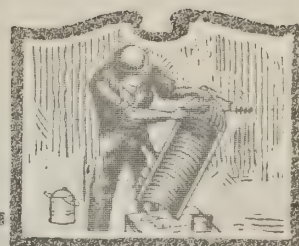


Dr. O'Connor, Lewiston



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars.



Cleaning the Drip Pan

THE drip pan under the engine is held in place by four springs with hooks attached, and before removing the pan for the first time it is well to examine the position the pan occupies so you will know how to proceed in replacing it. Note that the forward part of the pan rests on the forward cross member of the frame.

To remove the pan, loosen the hooks on the springs on one side of the pan only. Press in firmly on the side of the pan until the groove on that side of the pan clears the lower flange

of the frame channel, and then pull down on the pan. This will free that side of the pan. Then loosen the hooks on the other side of the pan and pull down and back on the pan, which will remove it entirely from the car.

A liberal supply of kerosene oil should be on hand for use in cleaning the pan, and a stiff brush, rags or other suitable material. If the coating on the pan is fairly thin, a little rubbing with the kerosene oil will remove it. If there is much of an accumulation, it may be better to scrape it out before applying the oil. After cleaning, wipe the pan well with a cloth or waste, inside and out, and replace.

To put the pan back in position, raise the front end of the pan and press in on the sides in order to let the top part of the grooves slip by the lower flanges of the frame channels on either side. Then push the pan toward the front of the car until the front end rests on the cross member of the frame. Next press in on both sides of the pan toward the rear and push up until it snaps into place, with the flanges of the frame channels fitting in the grooves all along on both sides. Then snap the spring hooks in place. The purpose of the springs is to keep a constant tension on the pan to hold it in the proper position.

BUICKS GIVE SATISFACTION EVERYWHERE

A Letter From France

Blois, France, Jan. 8, 1919.

Buick Motor Car Co.

Dear Sirs:

Am taking the liberty of writing you, but feel like I was writing to some of my personal friends, as I have driven Buicks ranging from the old Model ten, on up to the latest thing until I left, and knowing that nobody can do that without feeling as I do, and wishing to say that I think that the little Six forty-five is as far ahead of anything within five hundred or a thousand dollars of the same price, as there is in daylight and dark.

I am not writing you with a month's experience, but with seven years, and will say in that time I have had experience with every American make of car on the market, and since I have been over here have had quite a little with European makes.

But, the real cause for this letter is, I started down town today and as I passed the market, I heard an engine running with a cut-out open and I said to the Corporal with me, "Say, that sounds like a Buick to me." On going around to where it was, there stood a little twenty-five and on examination it proved to be a 1912 Model. To say I was surprised wouldn't express it at all.

So I just blew his Klaxon until the Frenchman showed up who owned it and proceeded to jabber with him, etc., and found out that he has had the car about two years and was out for real expenses about twenty francs or about four dollars in real money, and on top of that he wouldn't sell it for sale price.

He expressed himself as being very proud of his "Bu-eek" as he called it and said he was going to get one of the Sixes as soon as possible.

Knowing that it isn't necessary to wish you a prosperous year, will close with best regards.

SERGEANT OWEN GRILLS,

P. W. E. 93., A. P. O. 726, American E. F.

Would like very much to get one of the Buick Bulletins and specifications on that new Six if possible and convenient.

Buick a Good Investment

Mr. R. L. Johnson, of Holyoke, Colorado, writes as follows: "I am not on your mailing list for the Buick Bulletin but just finished reading the January issue sent my brother. I enjoy the magazine very much but wish to ask you something of interest to me.

"I owned one of your light Buick Sixes last summer and drove it over sixty-two hundred miles in about three months and received the best possible service, which the following will prove.

"I made as high as the number of miles from Fort Collins, Colorado, to Pueblo, Colorado,



Everybody knows
Valve-in-Head
means Buick

in one day, so if you will look up on the road map how far it is, you will know that I did pretty good driving in about ten hours, but I made over fifty-four hundred miles before I had any one of the tires off. I drove through mud and over several of the mountain park roads while I owned the car and never had any trouble at all.

"Now the point I want to make is that I received perfect satisfaction from it and to prove the same I only paid \$1400.00 besides about \$75.00 in extras and sold it in the last of September for \$1500.00."

Has Owned Four Buicks

"I read your Buick Bulletin every month," writes Mr. J. D. Furtick, Jr., of Rienzi, Mississippi, "and as I have owned four different models of the Buick Car, I think it is time for me to tell you what I think of the Buick Car. I think they are the best on the market for the price, as I have owned seven different kinds of Cars beside the Buick, in the last seven years. My last car was a Buick 6-D-45 and I have made it do what other cars failed to accomplish. I can get 18 miles to the gallon over most any kind of road. I claim to be some driver myself, and I believe when I get in a car, I can tell in a little while what it is.

"You sure have it right when you said, 'When better automobiles are built, Buick will build them.' So, if any time you have anyone in doubt about the Buick car, send them to me, as I have the facts about it.

"I could tell you about some extra big trips I have taken, but it will take up too much time for you to read, so as long as you make the Buick Car, please send me the Bulletin, and I will be ready before long for one of your new 1919 Buick Cars, as I have just sold my 1918 Car."

Buick the Best Family Car

"I am receiving a copy of the Buick Bulletin every month," writes Mr. Fred S. Bryant, of Watertown, New York, "and enjoy reading it very much, and I don't think many Buick owners have much on me. I purchased my light Six in July, 1916, and have driven it 9,000 miles on the same tires and spark plugs that came with the car. I am getting from 18 to 20 miles on a gallon of gasoline on good roads. My repair bill has also been very light, carbon burning once, and valves ground once and since then I have always ground my own valves, which is a very simple job.

"On one trip from Watertown to Utica, to Rome, and return, a distance of 205 miles was made on 10 gallons of gasoline.

"I am a locomotive engineer and not being at home much of the time, my son or daughter can handle the car as easily and as well as I can. I also think I was the cause of the dealer selling three more Buick cars to railroad men. I will always have a good word to say of the Buick, for I think it is the best car in the market for a family car."

"The Best Auto in Town"

Slatersville, R. I., Jan. 15, 1919.

Buick Motor Co.,
Flint, Michigan.

Gentlemen:

I have been the owner and booster of Buick cars for the past seven years. My first car, a Model 10, I bought in 1911 and ran it five years without a mishap. Two years ago I bought a Model D-4-35 which I have used nearly every day since and has never made a skip, which everyone thinks is wonderful and all think I have the best acting auto in town. It's always on the job and ready. I do all my business, delivering poultry and eggs and farm products with it. The Buick is the only machine I ever owned or ever expect to own.

E. O. CORNFORTH

P. S. I thank you for the Buick Bulletin which I receive regularly. I look for it as much as for any of my monthly papers.

E. O. C.

Perfect Satisfaction

Mr. Albion Felker, of Lowell, Massachusetts, writes: "I wish to say that I am still using my 1916 Buick car which was my original purchase from your company, and after having run the car about 16,000 miles it is in excellent condition. I have never been obliged to spend any money for new parts and have gotten an average of 18 miles to the gallon on gasoline. As soon as I am in the market for a new car it will certainly be a Buick as my car has given me perfect satisfaction."

The Woman Motor Car Purchaser



In a letter just received, Mrs. Charlotte Volkmann, of Boston, writes: "Herewith is a picture of my fifth Buick. The car is giving fine service and is doing eighteen miles to a gallon of gasoline. It has been running all fall and winter in War and Epidemic relief service. My next car will undoubtedly be another Buick."

WOMAN is rapidly coming to the fore in the purchasing of motor cars, and it is literally true that comparatively few motor car sales are now made in which a woman does not have a considerable amount of influence.

This fact was recognized some years ago, as veteran motor car dealers know, but at that time woman's interest in cars seemed to be centered chiefly in the closed models.

And when she did express her opinion concerning one of the open models, it was usually along the lines of appearance, finish and refinements.

For this reason, there was a general impression in the industry that women were inclined to take the mechanical features of a motor car for granted, and the first move of the salesman was to hand the woman buyer into the tonneau, invite her to be seated and call her attention to the comfort, roominess and luxury there.

But since that time women have learned to drive—not merely a few here and there, but in great numbers. A great many women have cars for their own exclusive use. Others share a car with one or more other members of the family. And as a result of their driving, women have been drawn more intimately in touch with the mysterious forces and mechanism that give life and action to the motor car, and today their interest in the mechanical side of the automobile is great.

True, women are still very much taken up with beauty, and convenience, and comfort. For that matter, so are the male motorists. These are features that the motor car purchaser of today has a right to expect, particularly among the better makes of cars. But the salesman can no longer expect to sell a motor car to a woman driver without first satisfying her as to the performance and operation of the various mechanical units.

The change is logical, when it is analyzed. For after all, the woman driver in many cases has had sufficient experience to know that motoring enjoyment depends to a great extent upon the right kind of mechanical equipment, and she also knows that design and manufacture have a great deal to do with maintenance cost.

Gasoline being the biggest individual item of expense, the woman has been led to inquire why it is that some cars give big gasoline mileage, while others of about the same size and weight simply devour fuel. And she has found the answer in the design and construction of the most complicated mechanism of all—the motor.

In discussing internal combustion motors, it is first necessary to get one fact firmly fixed in mind, namely—that they are all heat engines. In other words, they derive their power by converting the fuel used in operating them into heat, and it is the expansion of the heated gases resulting from each explosion in the cylinders that supplies the impulses necessary to run the motors.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be. In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water-jacketed space there is in a motor, the greater the thermal (heat) efficiency will be, because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases both inlet and

exhaust valves form a part of the combustion chamber, where the heat is greatest, and in con-

sequence it is necessary to water-jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. This pocket is water-jacketed. In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water-jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water-jacketed, it follows that the Valve-in-Head type affords the minimum of water-jacketed space that is possible to be secured for any given size of cylinder.

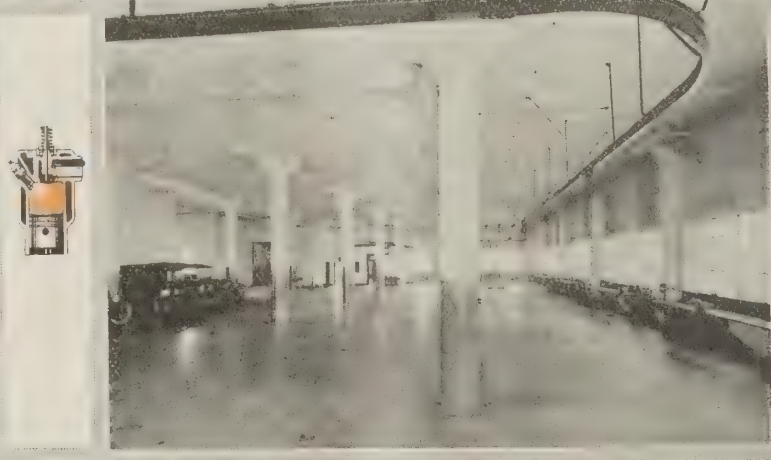
Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water-jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the big valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is more perfect in the Buick motor because the mixture is purer.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other type of motor, a quicker ignition of the charge and a smaller loss of heat through the water-jackets. The sum of these advantages in design is more power with less gasoline consumption.

To these characteristics of design is added in the Buick motor the fruit of nearly twenty years' experience in building Valve-in-Head motors exclusively, and in improving the design consistently every season throughout that period.

Buick's New Home in Omaha



THE Nebraska Buick Auto Company, of Omaha, has grown so rapidly during the past ten years that it is now reputed to be the largest automotive distributing organization in the United States. A large new building has just been erected by the Nebraska Buick Auto Company at 19th and Howard streets, Omaha, with a frontage of 88 feet on 19th street and 136 feet on Howard street.

The building is four stories high, with a full basement. The display room on the first floor is devoted entirely to Buick cars, and is 85 feet in width and about one-half block long. Large plate glass windows along both street fronts flood the entire room with light, so that only on dark, cloudy days is artificial light necessary in the display room. The floor and wainscoting are of vitrified gray granite tiles with ornamental borders. All partitions are of brown mahogany and plate glass.

Semi-direct lighting effects are obtained by the use of twenty ceiling fixtures of special design, made of cast ornamental bronze and suspending opaque bowls. The walls and ceiling are done in ivory enamel to assist in reflecting the light.



The service repair shop is located on the fourth floor and is equipped with the most modern machinery throughout. Twelve large benches are arranged in front of the windows to give plenty of light for the workmen, and the machines are conveniently arranged in the most accessible manner. Shower baths and wash rooms are also provided for the men and every effort has been made to make their working conditions all that could be desired. The ceiling is 19 feet high and the room is ventilated by means of Fenestra sashes and revolving vents at the roof.

The parts department is located at the rear of the first floor and connects with the upper

floors by means of a dumb waiter. The stock is kept in an orderly manner in large steel bins.

There are two elevators — one for passengers and one for cars. Both are of the push button control type and of steel construction. The automobile elevator has a platform 11 feet 4 inches by 27 feet 9 inches and is capable of lifting a load of 10,000 pounds. It is of the automatic leveling type, being automatically maintained level with the floor at the various landings without attention on the part

of the operator.

The building itself is of reinforced concrete construction of the flat slab type to allow the maximum ceiling heights, as no beams or girders drop from the ceiling in this type of floor construction.

The exterior design is classic, with a modern French tone throughout. The three street fronts are finished with a pink granite base, varying with the street slopes from three to fifteen feet in height.

Above this base the piers and main cornice are of egg-shell finish — terra cotta in ivory color, with ornamental spandrel and cornice panels of peacock blue.

Buick
 EVERYBODY KNOWS
 VALVE-IN-HEAD MEANS BUICK



The increased use of Buick closed models in rural communities during the past few seasons is the result of wider familiarity with the capacity of these cars for meeting the requirements of rural service.

Buick closed cars today, without sacrificing one whit of their luxury or comfort, are as much at home on a country road as on a smoothly paved street, and as appropriate for cross country driving as for strictly social purposes.

In three distinct types—four, five and seven passenger capacity

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities—Dealers Everywhere



The Buick-built Front Axle

is as strong as correct design, good material and careful manufacture can make it.

Drop forged in a single piece from bar steel of special formula, it is strong enough to bear the weight of a truck, and pyrometer controlled heat treatment gives it a steel structure of remarkable toughness and uniformity.

This axle is designed by Buick engineers, forged and built complete in the Buick factory, directly

under the supervision of the men whose reputations depend upon its serviceability. From its I-beam section to its drop forged steering connections, every detail is worked out to perfection. The Buick front axle is typical of the perfectly controlled quality that gives Buick cars their unusual capacity for service.

The Buick factory is more than a mile in length and all Buick units are produced in this mammoth plant.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars
Branches in all Principal Cities — Dealers Everywhere

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THE *Buick* BULLETIN

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of the Buick Motor Company

JULY 1919

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In this number

THE NEW 1920 BUICK MODELS—Pages 8, 9 and 12



"And where is that band who so vauntingly swore
 That the havoc of war and the battle's confusion
 A home and a country should leave us no more?
 Their blood has washed out their foul footsteps' pollution.
 No refuge could save the hireling and slave
 From the terror of flight, or the gloom of the grave;
 And the star-spangled banner in triumph doth wave
 O'er the land of the free, and the home of the brave."

This silk service flag hangs in the reception room of the Buick office building, at Flint, and carries the number of men throughout the organization who were in service during the great war

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Number Seven

THE GREEN STONE

At one time," said Hildred, "I was as skeptical and contemptuous as you are about these occult matters. Today I call myself open-minded."

"But, my dear man!"

"Yes, I know," he laughed, "It is a hoary superstition. But nearly all of us are superstitious in one way or another; and every now and then a fellow is pulled up short by an experience that makes him a trifle less positive about things on which he fancied there could be no two opinions. I had a curious adventure when I first came to London some winters ago which has often made me wonder whether the scientific mind has not sacrificed more than it need have done to the prejudices of materialism. Of course, I came up to the big city with all the delusions and confidences of the ambitious young man. Fortunately, I had more than the traditional half-crown in my pocket, and something more marketable than the usual volume of poems.

"I found 'diggins' in a delightful northern suburb, among woods that were merged in leagues of forest when Shakespeare lived. My particular street ran along the crest of a ridge which dipped down to old farms; and a crossroad from the open fields led to a bridge over the railway. Lord, how I used to stand on that bridge at night in buoyant self-reliance.

"The steel rails raced in straight gleaming lines into the darkness, and beyond it into a blaze of lights that clustered thickest about the green and red signal lamps and were scattered in bright sparklings over an invisible hillside. Beyond those hills lay Babylon the Golden, with a dusky radiance smouldering over it in the clouds. I thought of Simeon the Stylite looking down from his pillar on the dancing girls and torchlight revels of—Damascus, was it?"

"Of Antioch, perhaps."

"Make it Antioch. It's all one. I thought, too, of Blucher on his visit after Waterloo, and his *mot*: 'What a capital to plunder!' London in those days was a splendid loot, I fancied, awaiting conquest. It was on the shortest day of the year that I finished my novel. It had snowed from dawn till dark with the quiet persistence of an old-fashioned winter. When I went out at night for a turn after supper the full moon was shining, and the village was like a gigantic Christmas-card. The half-timbered farm and its huge barn were hooded with snow, and the wide fields, marked black on white with the shadows of trees and hedgerows,

By William Canton

wanted but the shepherds and the angels. I went down to the bridge. The lights at the gates of Babylon sparkled with a frosty clearness which I took for a good omen, and that pleasant impression was completed by the sound of



"It was plain at a glance that this was no ordinary street minstrel"

Raffa Cavatina which a street fiddler had struck up under a lamp at the end of the bridge. My hand slipped into my pocket at the sight of this poor devil playing in the snow.

"It's a cold night for your calling," I said, as I put a small coin into his hand.

"Thank you, sir; it is sharp," he said, "but not unseasonable."

"I told him I should have thought he had chosen rather a lonely spot for music, but he observed that while it was far away from the noise and bustle of the streets, a fair number of well-to-do people passed to and from the station.

"It was plain at a glance that this was no ordinary street minstrel. The refined, clear-cut face, the bearing and speech of the violinist, were those of a gentleman slightly over middle age who had fallen upon evil times and who was adapting his manner to his circumstances. Had it not been an impertinence, I should have liked to draw from him the story of his misfor-

tune. As it was, I wished him goodnight and better luck.

"May you, too, sir, be lucky," he rejoined, with a singularly catching smile.

"By an odd chance, my luck far outran the dreams even of youthful ambition. My novel was accepted by an enterprising publisher, who urged me to begin at once on another book. I worked out a drama that I had in the rough and started on a new story, the scene of which was laid in the summer woods around me. When I dropped the last of my revises into the post late on Midsummer Eve, I felt the exaltation of a brilliant future opening before me. It was a lovely June night, and I set out for my usual stroll to the bridge. Bats

were flitting, and warm after-glow lingered on the horizon in the north and west. On such a night, when the woods were all forest, the girls of long ago bathed in the dewy flax before the fires of St. John were lit upon the hill-tops, and fiery wheels were sent rolling down to the brook for good fortune. Slowly the music of a violin recalled the incident of the snowy night before Christmas. The minstrel had long since passed out of my thoughts; but the familiar Cavatina assured me that this was my poor gentleman some time before I could see his face.

"Good evening," I said; 'it is months since I saw you last. You do not appear to come this way often.' No, he replied he did not come often; but it had been his custom to come once in the summer and once in

the winter. I expressed the hope that he had done well elsewhere. Yes, he thanked me, he had been fortunate.

"And you, sir, if I may venture to ask?" "Oh, better than I ever hoped," I answered gaily as I offered him an unusually large coin.

"Believe me, sir," he said hastily—and I saw the color rise in his face, 'I didn't mean *that*.'

"I am sure you did not," I said heartily, 'but luck came my way after your good wishes, and I am glad to be of some little service to you.'

"You are very good, sir," he rejoined. Once again I bade him goodnight, without coming nearer to the curious story which, I felt certain, explained his wandering life. 'Perhaps we shall meet again in the winter.'

"It will be a pleasure, sir," raising his hat with the suggestive grace of a more prosperous condition.

"The next six months was the most trying period in my life. My novel had scarcely been issued when my publisher failed through the

dishonesty of his cashier, and the supplies on which I counted from that quarter were cut off. My play was returned with a complimentary note and an intimation that I had been forestalled by a distinguished dramatist whose new work was laid upon the lines of the fine old legend which I had treated. As the legend was my own invention, it was some satisfaction to reply that I should await the result and might feel called upon to challenge the dramatist's mediaeval sources. Nothing I attempted seemed to prosper, and as the year drew to a close I discovered that London with its millions could be the loneliest and most inhuman place in the universe.

"The shortest day of the year found me in a savage mood and furious with my fate. It was a mild, damp, depressing night, and I laughed bitterly as I thought of the glittering gates of Babylon. I had the sense to recognize that much of my chagrin was due to disappointed vanity and impatience; youth, strength and health were all in my favor; and, in any case, I had better cause for cheerfulness than my street minstrel. At the moment I thought of him I became aware of three figures struggling under the lamp on the bridge. There was a cry for help, and I sprang forward with a fierce joy that here was something I could wreak my vexation upon. The ruffians fled at the sound of my footsteps, and though one felt the weight of my stick, both escaped.

"The musician, for it was he, was shaken, but uninjured. 'Not a serviceable weapon,' he said, showing me his shattered violin, and dropping it over the ridge onto the embankment; 'let me thank you for your ready help. I was taken by surprise, or I should have given a better account of myself.'

"I scarcely knew how it happened, but in the excitement of the moment every trace of the street minstrel had disappeared; I was speaking to a kindly English gentleman, and within a few minutes, as I accompanied him to the railway station, I had confided to him all that had occurred to me during the year. Before we parted he gave me his name and desired me to call upon him the next day at an address in Westminster.

"I am anxious to know you better,' he said. 'I think your affairs in skillful hands might be pulled into shape. And I owe you an explanation of my appearance here in the guise of a street fiddler.'

"I discovered that my musician was the big engineering contractor, John Everard. To him I think I owe everything. At the outset he insisted on being my banker, till my own ship came home. He has saved my book from the wreck of bankruptcy. More wonderful still, he succeeded in having my play staged. I have never looked back since.

"One evening in spring, he took me into his study after dinner, and when our pipes had been lit, he loosened a thin gold chain from his neck and passed it over to me. 'I want you to look

at this, Hildred; what do you make of it?' At the end of the chain there was a small green pebble enclosed in a little case of silver filigree which almost concealed various characters or symbols finely engraved upon it. 'Unless it is a charm or talisman,' I replied—and I make the guess because you are wearing it—I have no notion of what it may be.'

"It is a talisman, a lucky stone,' said Everard. 'When I was traveling twenty years ago in India I fell in with an old Buddhist priest and was able to render him material service. I slept one night in his old pagoda among the crumbling images which had been the offerings of forgotten generations, and the next day the old man gave me the stone as a parting gift. So long as I wore it, he said, no

without it. But moderation and decent living and generosity hardly seemed a sufficient propitiation of the unknown powers that appeared to be watching me. This must all seem craziness to you, but to me it was a real and dreadful necessity.

"It is curious,' he went on, 'what casual trifles influence us. Glancing over the papers one day I noticed a passage in a review of Asolando, in which Browning describes how the Emperor Augustus, at the height of his power, spent one day in the year disguised as a beggar in the streets of Rome. That was the beginning of my street fiddling. You may well look amazed. But even as a beggar MY luck pursued me, and I saw that if I was to touch poverty twice a year and live on what charity

gave me, I must go out without my talisman. You can't guess the struggle I went through to do that. Until that moment I had never realized how thoroughly I had passed into slavery of an unknown power. Still I did succeed in laying myself bare to misfortune and taking my human chances. So far, nothing worse than you know has happened to me.'

"He stopped abruptly; then, after a long pause, 'What would you do?' he asked.

"If I may speak frankly,' I replied, 'you have put the answer into my mouth. I suppose there is no use trying to convince you that the luck of the stone is all an illusion.'

"None whatever,' he said.

"Do you not think, then, that safety from risk and the best fortune in the world are too dearly bought if they enslave a man to unknown powers?"

"He nodded silently.

"Then, why hesitate?"

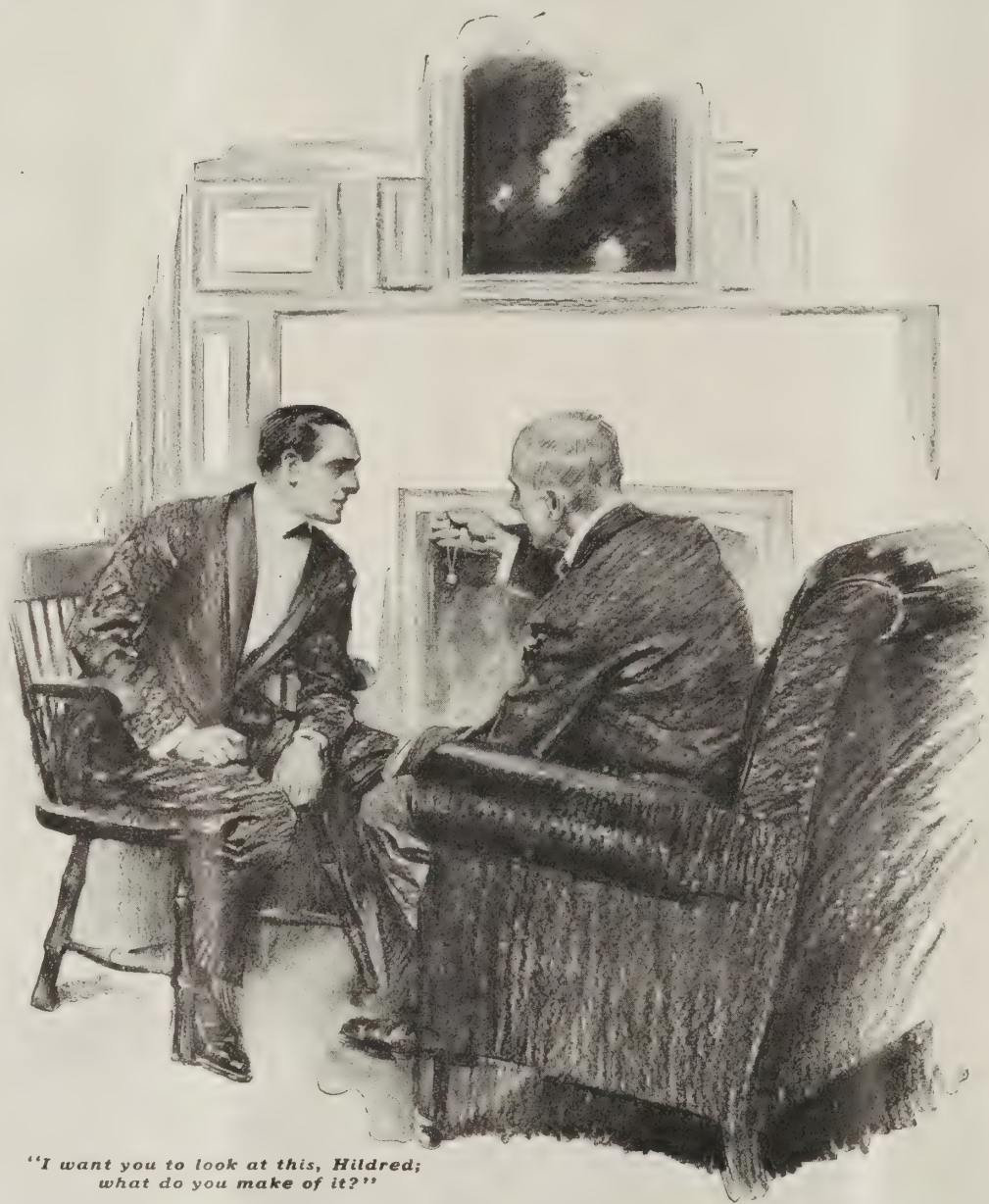
"My dear friend, you don't know what the word fear means."

"What more have you to fear than the worst that can befall any of us? You ask what I would do. I would smash this devilish little thing into

powder and drop it into the fire."

"Everard took the talisman and looked at it curiously. 'There are queerer things in the world,' he said, 'than most of us imagine. I know you don't believe in the virtues or deviltry of this green stone, yet it was only yesterday that I heard a hard headed old traveler say that there was a sort of primeval instinct in the great deserts which drove even men like himself to do things that were grotesquely unscientific, but absolutely right.'

"The conversation drifted to other subjects, and though we often met, Everard never referred again to the talisman. Two or three years later, he was run down in the streets and killed by a motor car. It was mentioned at the inquest that he was carrying a violin at the time, but probably no one but myself perceived anything curious in the fact that the accident took place late on Midsummer Eve."

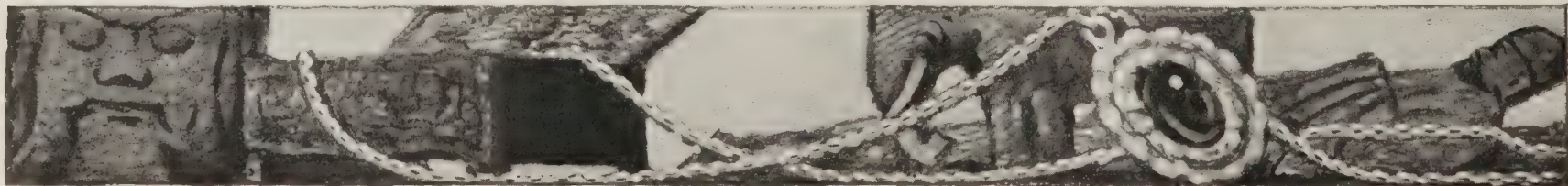


"I want you to look at this, Hildred; what do you make of it?"

serious mischief could befall me and I should prosper in all I undertook. He warned me, however, that abnormal good fortune always ended in disaster unless means were taken to avert it.

"I was incredulous, of course, but by some odd chance I had a marvelous run of luck. In all sorts of risks and dangers I bore a really charmed life, and everything I touched turned to success. That was all right and jolly enough, but at last my unfailing luck grew so uncanny that it really frightened me. Do you remember that creepy story of Herodas about Poly-crates? His best friend was scared away by his eerie good fortune, and in the end he perished on the cross. Time and again I was tempted to drop the green stone into the sea, and take my chances like other men—but I didn't.

"Well, I cast about for some means to stave off calamity. Frankly, Hildred, the dread of the green stone made me a better and more kindly fellow than ever I should have been



CURRENT COMMENT

By E. T. STRONG—General Sales Manager

A MAN who had bought a fine harness and had in some manner broken one of the reins, would scarcely take the harness to some other maker and have a new rein substituted. He would more likely go back to the original maker and have a new rein made up from the same stock as the other sound rein, in order that he might be sure that both reins were properly mated in quality as well as in appearance.

In the same manner, the man who needs repair parts for his motor car looks to the manufacturer of that car for them. He knows that the logical thing to do when anything happens to a piece of mechanism that it has taken experts many years to develop, is to restore it as nearly as possible to its original condition. And reputable manufacturers make this kind of service possible by furnishing repair parts that are in every way duplicates of the original parts.

As a matter of fact, none but the original manufacturer is in position to furnish such parts, but there are a number of small concerns that are seeking to market repair parts for various makes of cars by claiming that these parts are "just as good" as the originals. Price of course enters largely into their claim for preference.

NOW, these parts may look like the originals, to the naked eye. But the naked eye is hardly to be trusted in matters of this kind. The average owner or garage man has no means of testing such parts, but must take the word of the manufacturer for their quality.

This is especially true of the most important part of all—the material used in their manufacture. How is the buyer of such parts to know the percentage of carbon, or nickel or other ingredient in such a part, and even if he did know, what means has he of assuring himself that the formula used is the correct one? Motor car manufacturers are not in the habit of spreading their specifications broadcast. The results of their research have cost many thousands of dollars and many years of effort and study, and these specifications are as much a part of their business as the buildings, the machinery and the personnel of the organization.

Let us take so simple a thing as a bolt for a connecting rod, a main bearing or a spring. Externally it is just an ordinary looking bolt that could be

cut out of a bar of steel by anybody who had a machine to do it. But in fact it is a carefully designed and manufactured unit of the car, made of specification steel and given a carefully prescribed heat treatment so that it may be able to take care of the strain that it must undergo every minute the car is in operation.

AND so it goes with every part, both large and small, that enters into the makeup of a well designed motor car. The point has constantly been made by the Buick Motor Company that the reason for Buick serviceability is not because of any single unit or set of units, but because all of the units in Buick cars are so designed and built that they not only perform their own functions well and correctly, but are perfectly balanced in strength and action with all the other units in the car.

This balance is the result of nearly twenty years spent in developing the Buick car, in what is undoubtedly the world's largest motor car factory, with an engineering department augmented by four very complete scientific laboratories—chemical, physical, metallurgical and electrical.

If it required equipment such as this to develop these units in the first place, then it will require an equally efficient and well-equipped organization to duplicate them, even approximately. Needless to say, no such thing has been or will be attempted. Genuine Buick parts, and parts for Buick cars that are in every respect up to the Buick standard, can be obtained only through the Buick Motor Company.

The cost of making Buick parts by a small organization, or even by a large organization, would be prohibitive, provided the Buick standard of manufacture were maintained. Before the manufacture of such parts can be attempted, the necessary tools, dies, jigs and fixtures, together with inspection gauges, must first be available. Any other manufacturer building such parts would necessarily have to incur the expense of securing that equipment and would have to distribute the expense over the parts sold. On the other hand, the Buick Motor Company already has this equipment on hand, as a result of having manufactured the cars on which the parts were used.

Therefore, any Buick parts, so-called, that are sold by an outside concern, cannot possibly compete with the original car manufacturer for such parts, and at the same time maintain the quality of the material, even granting that it had the full information at hand to enable it to make the parts according to specifications.

AN outside concern building parts has no particular interest beyond the original sale of the parts. The Buick Motor Company, on the other hand, has its reputation to maintain, on repair parts just as much as on new cars. For upon the serviceability of each part, as well as upon the serviceability of the cars as a whole, rests the assurance of future business in the sale of new cars.

Upon this business principle the whole structure of the mammoth Buick service organization rests. There are thousands of Buick dealers that stock repair parts, and at every Buick branch house is maintained a reserve stock covering all models of Buick cars, upon which reserve stock the dealers in that territory may draw. Traveling service representatives are constantly inspecting the stocks of parts in the various dealers' bins, and as soon as the stock of any dealer falls below a certain point a shipment of additional parts is made to him from the nearest distributing station.

AND all of these parts are genuine Buick parts, made at the Buick factory precisely the same as the parts for new cars—of the same materials, from the same blue prints and under the same rigid inspection. They are parts that are proven by a series of exhaustive practical tests, not the least of which is daily service in the hands of hundreds of thousands of owners in all parts of the world.

No other parts should be accepted or considered by the Buick owner. The subject is too vitally associated with the standard that is being maintained for Buick cars, and carried out in every detail of their construction. And we certainly cannot sanction any move that can in the slightest degree affect the attitude of a single motorist toward the Buick reputation, which has been built up largely on the principle that no motor car can rise superior to its parts.

Shipping the Liberty Motor

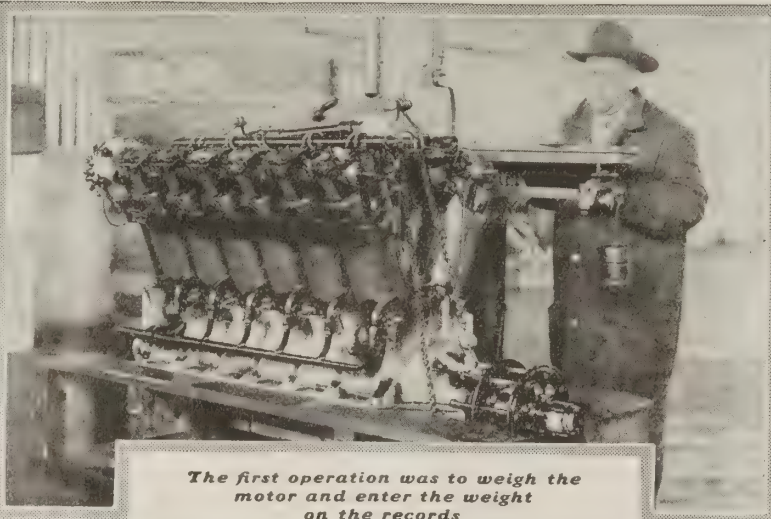
EVERY stage of the operations in connection with the Liberty motor was governed by a definite rule of procedure, and the packing and shipping of the motors was no exception to the general rule.

As soon as the motors were finally inspected and given the United States Signal Corps numbers, they were officially the property of the government. No stone was left unturned to see that these motors arrived at their destinations, not merely in perfect condition, but in such shape that they could be unpacked by following a certain set procedure, without the danger of injury of any kind or of losing any of the contents of the packing cases.

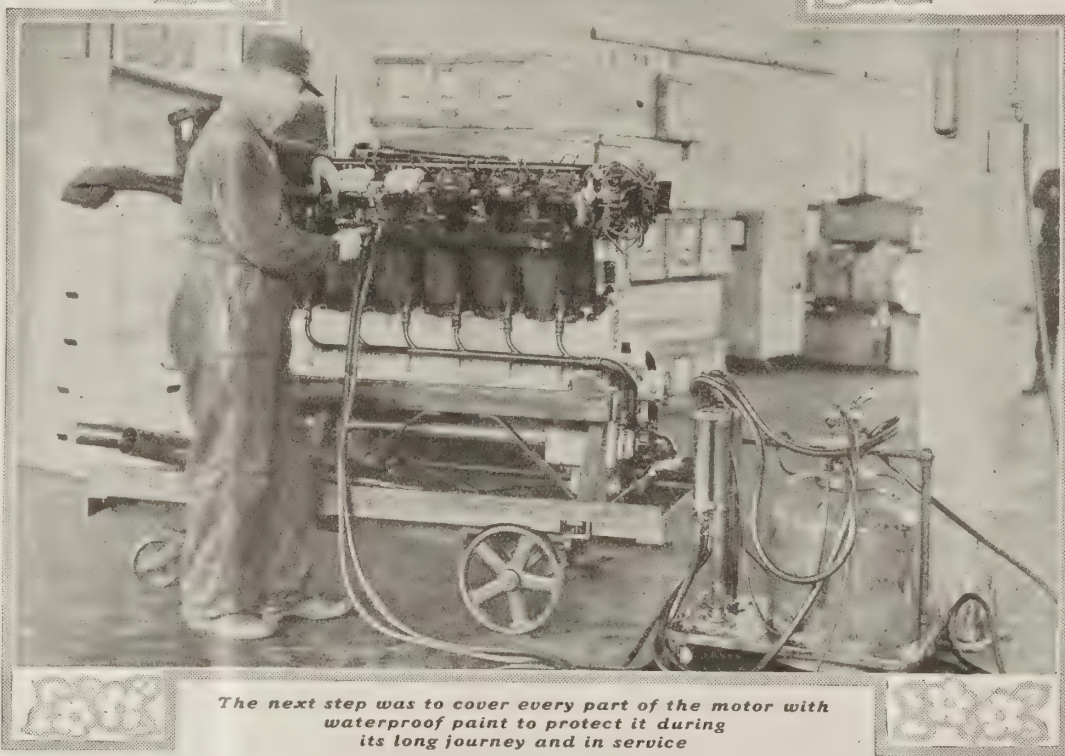
The first operation was to weigh the motor. This was accomplished by lifting it with a chain-fall to a specially prepared wooden frame placed on the scale. The weight of the frame was of course marked plainly upon it, and by deducting that amount from the gross weight, the net weight of the motor was easily figured. This weight was then placed on the blank containing a complete history of the motor and formed a part of the permanent records.

FROM the scales the motor was lifted to a truck with a steel frame and was taken to the sprayers and coated with a solution of anti-rust paint. This paint was applied with an air brush, being blown through the atomizer by compressed air, and in this manner it penetrated to all the awkward corners and every part of the motor was covered with a thin, moisture-resisting covering.

The boxes in which the motors were shipped were designed especially for the purpose and built exactly to specifications. The material



The first operation was to weigh the motor and enter the weight on the records



The next step was to cover every part of the motor with waterproof paint to protect it during its long journey and in service

used was white pine, and besides being of double thickness and braced with wood in several places, the outside was strongly reinforced with iron straps.

A frame of stout planks was also made to support the weight of the motor within the box, and to this frame the motor was securely bolted during transit. When ready to box the motor, the frame was first placed on a roller conveyer

with nails and cleats. Over this again was placed a tarpaulin cover, which was firmly roped in place.

The motor was now ready to place in the box, being slid forward on the rollers until the ends of the wooden bed were flush with the edges of the box. In this position, the top of the frame rested against the lower edges of the wooden braces inside the box, to prevent its

and covered with a sheet of water-proof paper of the proper size to protect the lower part of the motor. To economize space, the exhaust manifolds were removed and screwed to the frame, the openings in the cylinders being covered with plates.

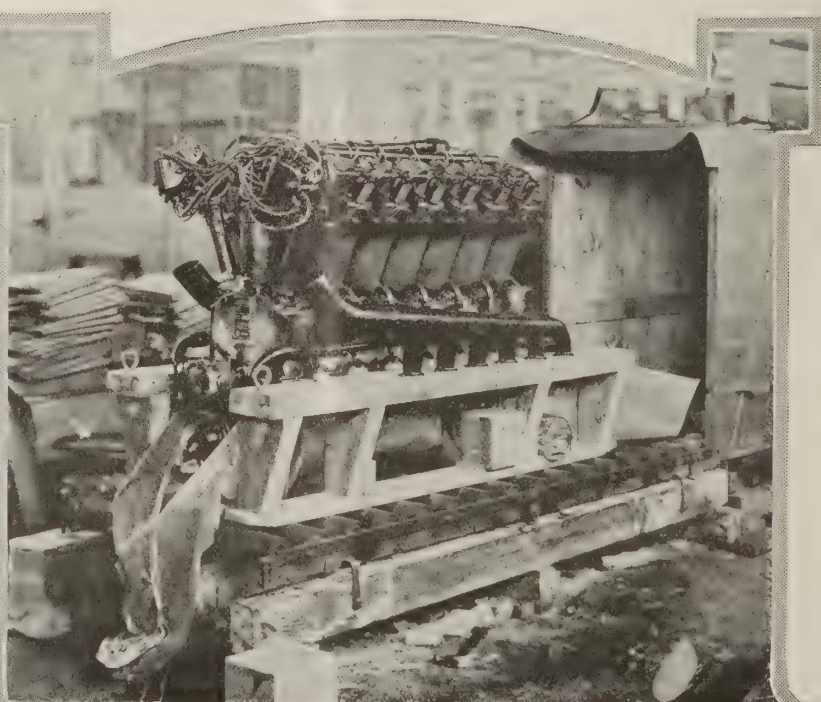
The motor was, of course, lowered onto the frame by means of a chain-fall, and the fourteen bolts put through this temporary engine bed. At the same time, four eye bolts were fastened at the corners of the frame for convenience in lifting the motor when unloading.

WITH each motor was included certain extra parts to provide for emergencies, and in addition to this a shipment of repair parts was made up for every batch of motors shipped. In this manner the matter of field service was taken care of along very similar lines to those followed by the leading motor car companies, as each depot and training station had its force of motor mechanics and an adequate stock of parts.

The next operation was to completely enclose the motor in an envelope of water-proof paper, pieces of the proper size being placed across the top of the motor in both directions, the ends of the lower piece already in place being gathered up and folded in, the whole being securely fastened to the wooden frame



This picture gives a good idea of the packing case, the motor support and the conveyer for sliding the motor into the case



Before putting the motor in the case, it was securely bolted to the wooden support to keep it from shifting in transit



The next operation was to entirely enclose the motor in an envelope of waterproof paper, which was tied and nailed in place



In addition to the other waterproofing precautions, a specially made tarpaulin cover was put over the motor and roped securely

shifting about even if the box should be turned upside down, and as a further precaution big lag screws were driven through from the outside of the box into the timber of the frame, by means of a pneumatic machine.

The ends of the box were now fastened in place, being reinforced with strap iron bands. It will be noted from the pictures that large iron bands were also passed completely around the box from top to bottom at either end. Across the top of the box was another thick layer of waterproof paper, lapping down over the sides and ends.

The bottom of the box was made of heavy planks, slightly beveled off at the ends to aid in placing rollers under the box for moving. Holes were drilled through this heavy bottom and two cables passed through, brought around up the sides of the box and fastened together at the center of the top, with a stout iron ring for use in lifting the package with a crane or block and tackle. The cables were held in position by staples driven into the box.

IN the case of export shipments, the outside of the box was given two coats of waterproof paint. Boxes for domestic shipment were unpainted.

On the outside of the box was plainly stenciled the address to which the motor was being shipped, the order number, whether the motor was of the high or low compression type, the Signal Corps number of the motor and the crate number.

It should be understood that there were two types of motors—a high compression motor for army

use and a low compression motor for the heavier navy 'planes.

The packing of Liberty motors was inspected as the work progressed, and as soon as it was finished the box was loaded on an electric elevating floor truck and placed in one of the waiting box cars.

From start to finish, this work was done under cover, and even during the loading operations the motors were not exposed to the weather. A spur track from the railroad ran directly into the Liberty Motor test field, and the cars were placed on this track for the full length of the covered loading dock. Like the rest of the test field, the entrance of the track to the field was carefully guarded by armed

watchmen. The field was brightly illuminated at night with powerful electric lights and fenced in on all sides.

AS soon as a freight car was loaded a check of its contents was made, the doors closed and the government seal placed on the doors. These seals were not broken until the motors reached their destination. During shipment, as well as in the placing of freight cars for loading, the efforts of the Buick traffic department were constantly employed to see that no delays of any character occurred. This department was constantly in touch with all the important railroad junctions and yards, not only by means of the telephone and telegraph, but through a number of traveling representatives whose sole duty it was to expedite the movement of material going to and from the Buick factory. This method is followed at all times and the organization has kept pace with the growth of Buick business through many years, and it was turned to the very best account during the manufacture of Liberty motors and other government war supplies.

ALL through the manufacture of government material, the Buick Motor Company devoted the greatest energy to co-operating with the government's wishes.

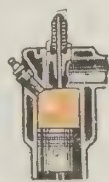
The shipping of Liberty motors is a good example. In government work, the routine to be followed is of great importance in expediting the handling of supplies, and serious delays may be occasioned by the lack of proper information or departure from the regular order. Throughout all stages, the organization was built along these lines.



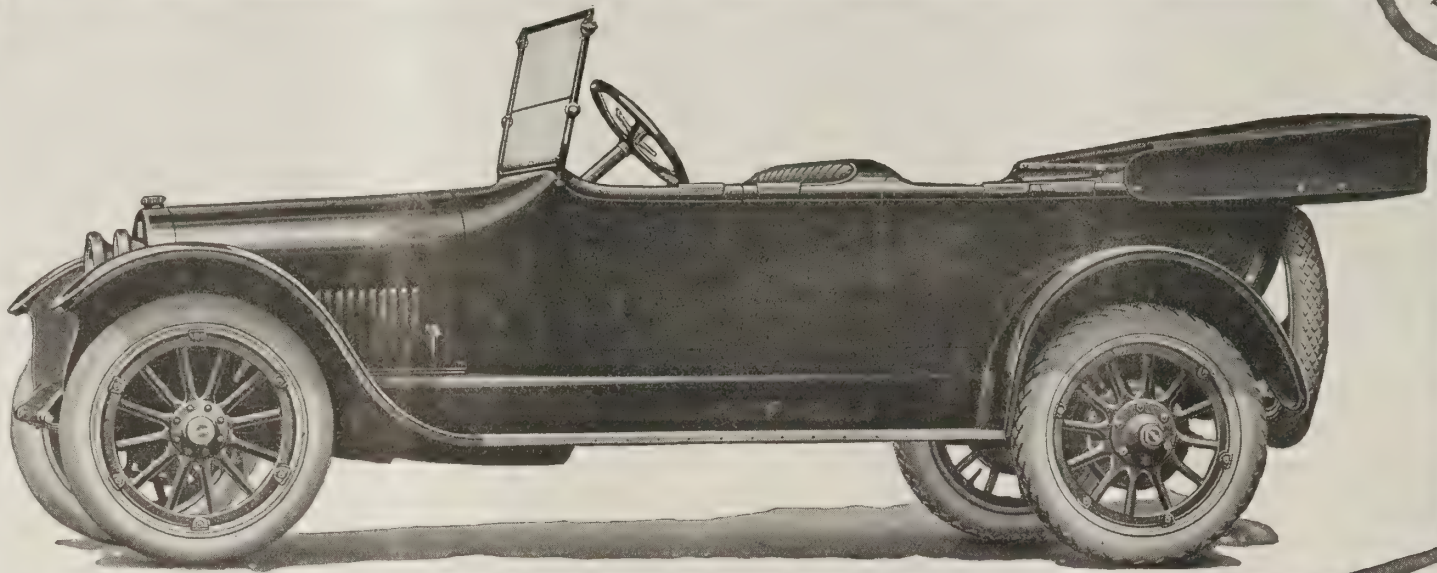
By means of the roller conveyer, the motor and support were put into the packing case, as shown in the upper picture. Then the lag screws were put through the case into the motor support



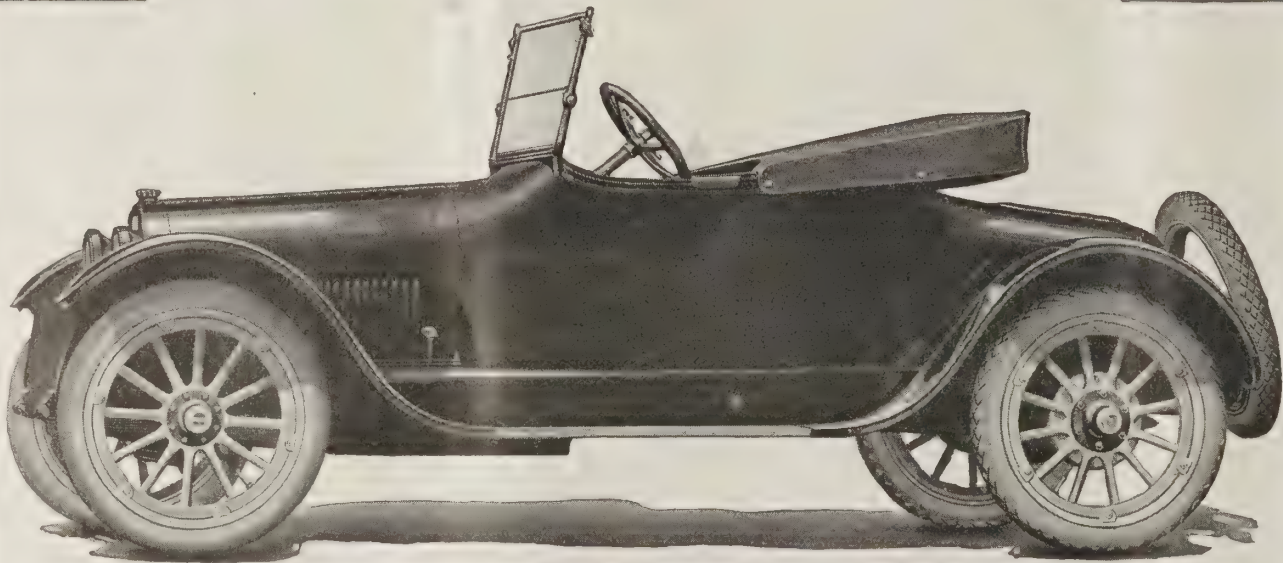
by means of a pneumatic tool, the end of the case nailed on and the whole bound with strap iron. The last step was to deliver the motor to the freight car by means of an electric elevating truck



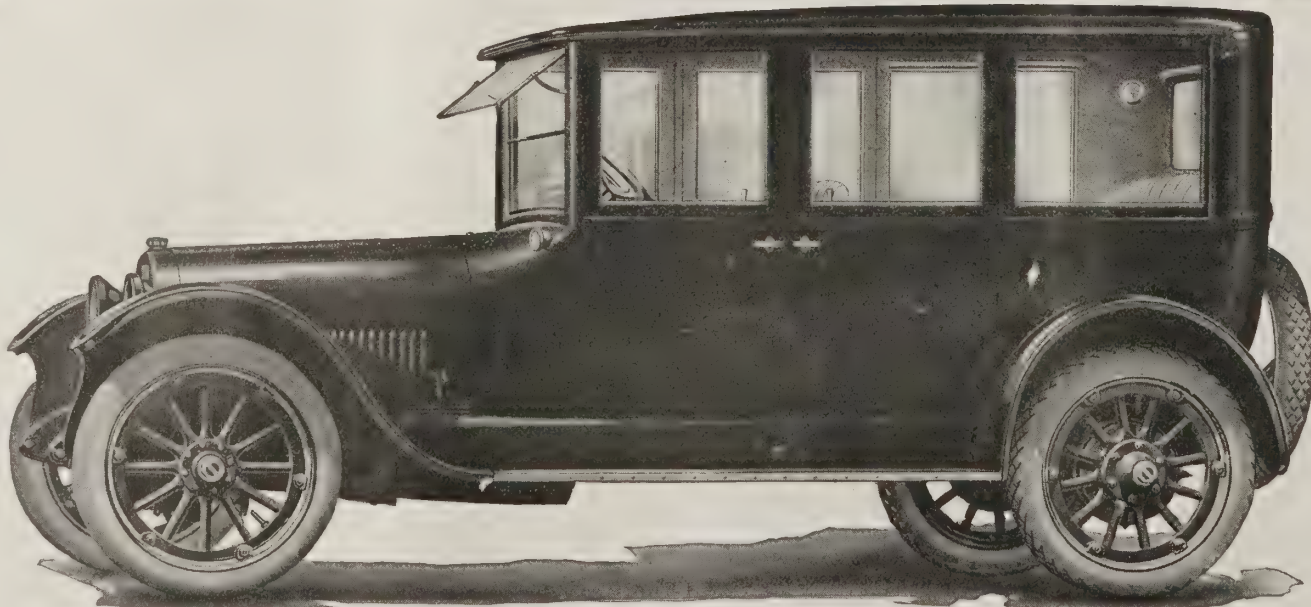
STILL BROADER UTILITY



Buick Seven-passenger Open Model, K-Six-49



Buick Three-passenger Open Model, K-Six-44



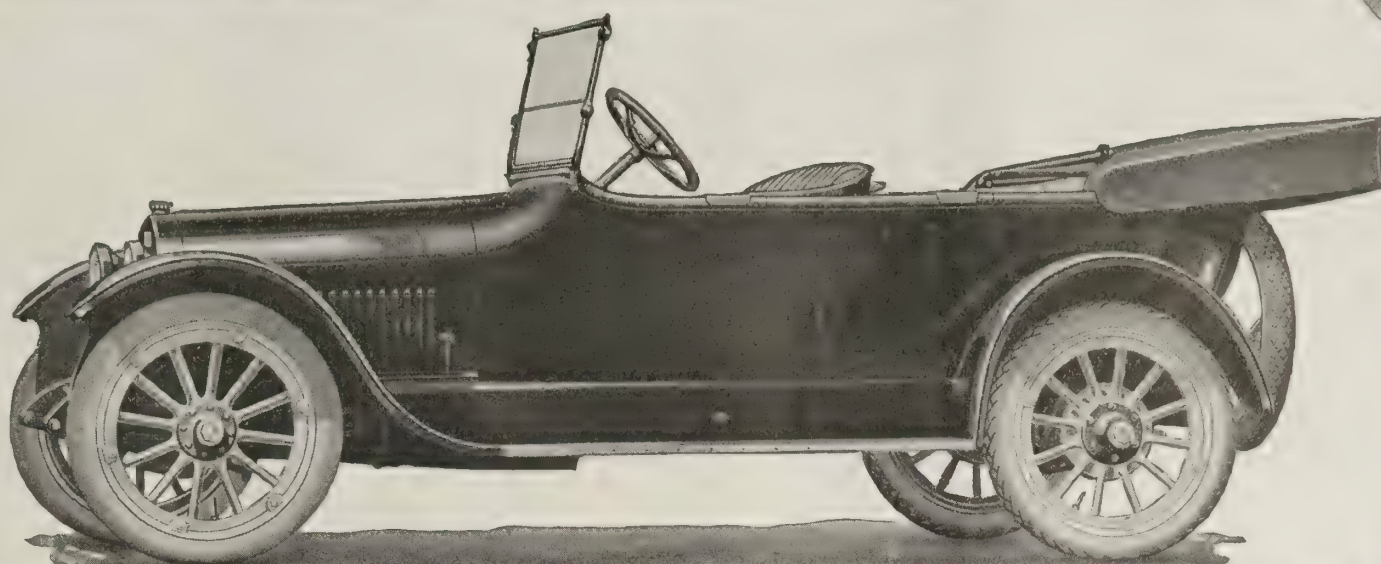
Buick Seven-passenger Closed Model, K-Six-50

THE utility that distinguishing Buick of past seasons is again a feature for nineteen-twenty broader utility, made nearly twenty years ago to the needs of the

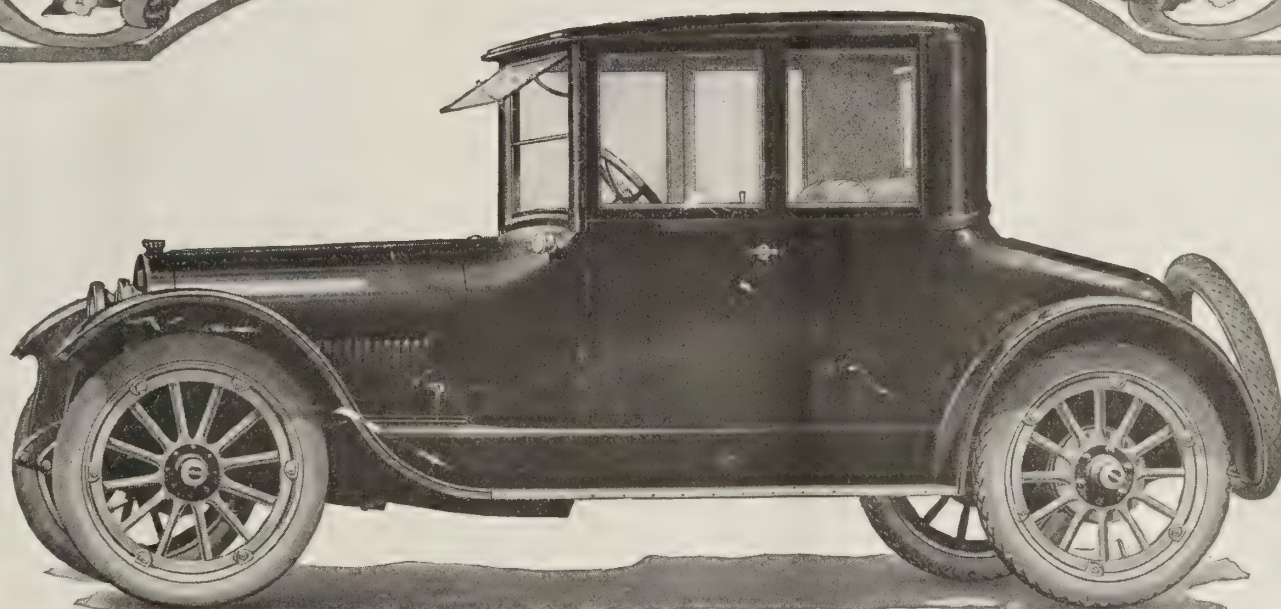
Three open and closed models comprise the line. They are common to all in convenience, comfort, gratifying performance. Buick Valve-in-Head with an equally valuable mechanism. Varying load and carrying capacity. Different body types of selection makes it a valuable purchaser to the requirements to the

B

MARKS THE NEW BUICKS



Buick Five-passenger Open Model, K-Six-45



Buick Four-passenger Closed Model, K-Six-46



Buick Five-passenger Closed Model, K-Six-47

has been the distin-
characteristic during
the outstanding fea-
ty. And it is a still
possible by applying
practical experience
resent.

three closed models
Many vital features
six models, such as
power and genuinely
e resulting from the
a motor in connection
w-l-developed chassis
ig degrees of luxury
are afforded by the
e The liberal range
possible for the indi-
fill his motoring re-
er.

Buick

THE BUICK ON THE FARM



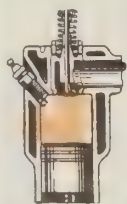
Mr. George Daughmer owns a farm nine miles from Upper Sandusky, Ohio. The photograph was taken with Mr. Daughmer seated at the wheel of his fifth Buick, a Model H-Six-47 Sedan. He also has an E-Six-45 Open Model and states that all the Buick cars he has owned have given him perfect satisfaction



"This is my third Buick, purchased in March, 1918," writes Mr. George J. Christgau, Water Valley, New York. "Am using this car for both business and pleasure, having an established business in Buffalo, and find it invaluable as a means of rapid transit to and from my home under all weather conditions. The car has gone 9,000 miles on the original tires and they look good for two or three thousand more. It has given excellent gasoline mileage and has been no expense in the way of repairs. It took several salesmen several years to convert me to the Closed Model, but now I would under no circumstances go back to the Open Model. As yet I have to find one argument against the Closed Car and everything in its favor. I have been thoroughly satisfied with each of the Buick cars I have owned"



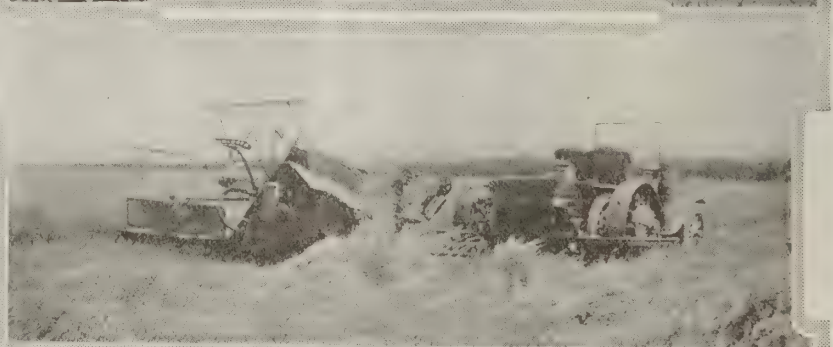
"I had no idea of buying a car last season," writes Mr. Lorin L. Reed, a prosperous farmer near Oakfield, New York, "but had to have the car I was running repaired. While this job was being done, your dealer loaned me a Coupe. When my E-49 was repaired I had become so attached to the Coupe that I did not care to return it, and afterwards purchased it. It has been very satisfactory and has cost me practically nothing for repairs, is very economical on gasoline and, as a matter of fact, has been most valuable to me in carrying on my city business matters. I can also say as much for my Model E-49"



Mr. L. J. Davis is a farmer living near Akron, New York, and is a staunch advocate of closed cars on the farm. "I purchased my Buick Coupe last spring and can honestly say that I didn't dream it could be such a business time-saver, enabling me to be out in all kinds of weather at all times, so dependable has it proven to be. My family is more delighted with it than ever and say it wouldn't seem like living to be without their 'little glass house.' Yours for a Coupe"



Mr. A. E. Johnson, of Secor, Illinois, is the owner of this Buick Model 17, concerning which he writes: "This car has been in use since 1910, and has been driven 30,000 miles. It has been driven on muddy, hilly and sandy roads and has been used for farming, as the pictures will show you. It still runs like it did

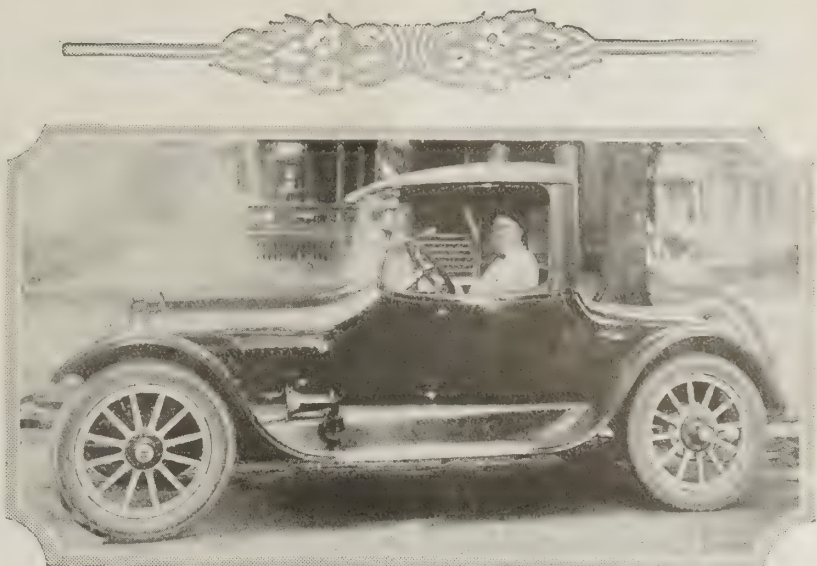


the first year. Up to this time it has done a year's work on a 160-acre farm, plowing, discing, pulling hay into the loft, cutting oats, grinding feed, dragging the roads and being used as a truck to haul things. The total expense on this machine, outside of tires and oil (which was not much) is about \$75 since 1910"

AND IN BUSINESS USE



Mr. F. X. Wood is the purchasing agent for Onondaga County, New York, with headquarters at Syracuse. "I find the automobile almost indispensable in taking care of the business," he writes. "I am driving a Buick Model E-Six-46 and am glad to say that for economy and general satisfaction I am more than pleased"



"I publish a weekly newspaper with subscribers throughout the county," writes Mr. F. C. Parsons, publisher of the 'Cortland Democrat,' Cortland, New York. "Formerly I kept two horses to enable me to get around in my territory. Seventeen years ago I bought an automobile and during the next two years sold both horses. I am now driving an E-Six-44, my third Buick, have greatly increased my business territory, and yet cover it much more thoroughly than in the old horse days. Without the automobile both business and territory would of necessity be much restricted. Could not 'keep house' in a business way without it"



Dr. H. G. Moth-Borglum, Doctor in Law and Politics, formerly Judge in Congo Free State, was a recent visitor at the Buick factory and at the salesrooms of the Starkweather-Buick Company, of Detroit. Without the slightest parley, Dr. Moth-Borglum tendered the salesman eight \$100 bills and a number of express cheques for the balance and drove away in a Buick Model H-Six-45. Dr. Moth-Borglum is making a tour of the country. He will drive from Detroit to Denver, thence to San Francisco via the northern states and will return by the southern route in the winter



The interests of Buick owners and the Buick factory are effectively taken care of in Wilmington, Delaware, and the surrounding county by the Wilmington Automobile Company—the largest and oldest motor car concern in Delaware. This establishment has been the home of the Buick from the beginning and is another striking example of the value of a Buick contract to the right kind of dealer. The building itself has a frontage of 100 feet and a depth of 325 feet, on one of the busiest corners in the heart of the city



Mr. N. F. Thompson is the District Engineer for the New York Central Lines, in charge of the western district, at Buffalo. "My Buick Model E-Six-46, which I purchased last May, has been driven 10,000 miles," writes Mr. Thompson. "Two-thirds of this mileage was made in business use—construction work. The jobs are located in different directions from Buffalo and require my attention each day. I visit each one daily in my car, which would be impossible without its use"

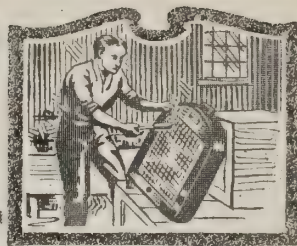


The Saunders Auto Company, of Holton, Kansas, have been Buick dealers for more than six years. They have made a signal success in that community, handling Buick cars exclusively. In order to meet the requirements of their thriving business, which is still on the increase, they have erected a new and specially designed establishment, with additional room and facilities for both service and sales work



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Repairing the Radiator

THE design of the Buick radiator is such that it not only affords the maximum of cooling space to the water, but is the simplest, cheapest and quickest radiator to repair in case of accident.

A small leak may be plugged or temporarily with anything that is convenient until the proper time comes to remove the radiator for repair.

If the leak is a large one, the affected area may be cut out entirely and a new repair section fitted into place in such a manner as to avoid detection, without interfering in any way with the circulation or cooling properties. This is distinctly a Buick feature.

After the radiator has been removed from the car, the outer shell is loosened and taken off the core by taking off the stove bolts and the

shim at the bottom. The damaged part is then cut out with a hammer and chisel, care being taken to cut along one of the vertical tubes (see photograph) and then to cut at right angles top and bottom. Always remove a square or oblong section. In cutting, see that you do not damage any of the sound cells.

With a soldering iron, melt the solder around the edges of the section you have cut, and lift out the damaged part. Trim off top and bottom with scissors, leaving a small flange on each cell to be soldered over and seal the joints.

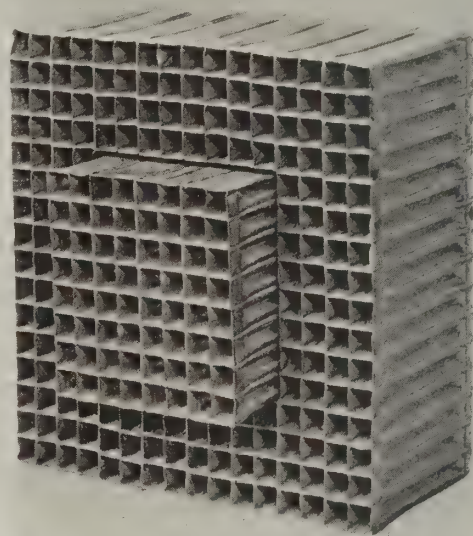
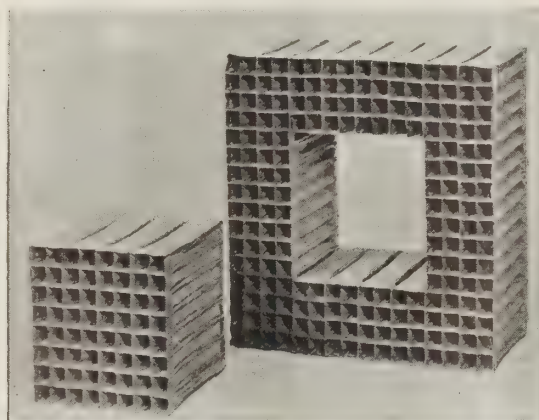
With a hack saw, cut a section from the repair sections furnished of the proper size to fit the opening. This can be done by counting the number of cells each way, vertically and horizontally. The section should also be cut vertically along the line of the vertical tubes, in order to give proper circulation. Put the repair section lightly in a vise, being careful not to damage the edges, and trim off the metal smooth all around. Then solder over the loose ends of the cells top and bottom.

The section is now ready to put in place. With a hammer, lightly tap the edges of the cells all around the outside of the cut in the radiator proper, as well as on the outside of the section, bending the radiator cells outward a little and the section cells inward, so the section will not bind when forced in place. Place a block of wood on top of the section and tap it with a hammer until it is flush with the rest of the radiator.

Then with a small pair of pliers, force the edges of the cells together all around the edges

and straighten them up so that the line of the cut is scarcely visible. Solder all around the edges of the cut on both sides of the radiator and test for leaks.

As will be seen from the sectional photograph shown, this leaves all of the vertical tubes in exactly the same condition as they were before the section was put in, and does away entirely with an unsightly repair job, reduced circulation space or the cost of a new radiator.



BUICK CLOSED CAR FEATURES

Buick Touring Coupe

THE BUICK Model K-Six-46 is a true Coupe model, with permanent sides and roof, an exceptionally wide body, and its graceful contour eliminates all open spaces between the body and fenders. From the outside, the appearance of the car is low, rakish and well-balanced, but there has been no sacrifice of interior head room. The rear fenders are new in design, with touring car running boards. Top, window casings and sashes are fully metal covered, eliminating the possibility of checks and open joints.

A Pullman type chair is provided for the driver, with a wide seat for two set slightly back of the driver's seat and an extra seat which swings out of the way under the cowl.

The back window is permanent, while the side windows may be lowered, the door windows being equipped with patented handles. There is a three-piece windshield of the storm-vision type, and a new-design, tilting type steering wheel.

The deeply upholstered interior is finished in a new and improved fabric, without bindings. Back of the driver's seat is a carrying space, with another in the rear deck. Electric side lamps are mounted on the cowl and a dome illuminates the interior. The double-latch doors may be locked from the outside.

Buick Touring Sedan

THE BUICK Model K-Six-47 follows the design and lines of the Buick seven-passenger Sedan very closely. The body is of new design, low in appearance but with ample head room. Top, window casings and sashes are fully covered with metal, giving perfect uniformity in finish and durability. All doors are properly hinged and fitted with double latches. The front seat extends across the body and there is a new-design, tilting steering wheel. The low seats give great riding comfort.

The interior is finished in handsome fabric, without bindings, with deep upholstery. Cold weather snugness or summer driving comfort are equally available by adjusting the three-piece windshield and windows. The windows are raised or lowered by patented devices operated by simply turning a handle.

The tonneau carpet matches the upholstery. The standard Buick instrument board furnishes every driving convenience and a dome light in the ceiling illuminates the interior. The cowl carries two handsome side lamps.

Buick Sedan for Seven

THE BUICK Model K-Six-50 four-door Sedan is the latest development in closed car design. The front seat, instead of being

divided, is full width, giving additional roominess to passengers and providing an extra brace to the body which adds considerably to its stability.

The latest type of cowl and side lamps, tilting steering wheel and satin finished interior trimmings are featured in this Sedan. The lining is done in rich plush, without binding. Altered lines and low-hung body give added grace to the exterior without sacrificing head-room. The main compartment accommodates two disappearing seats, which are built for genuine comfort.

Silk shades on rollers afford privacy or shut out a too ardent sun. Ventilation is controlled by the adjustable windows and windshield, the door windows being fitted with patent handles for raising or lowering them. Suitable lights give interior illumination. Both rear doors and the left front door lock inside, and the right front door from the outside, to insure safety when leaving the car. Lowered seats give greater riding comfort.

"Don't Tell the Speed Cop"

THE ability of the Buick to stand up under severe treatment has made Mr. Lewin Skirven a thorough Buick devotee.

"The Buick I bought of you about a year ago," Mr. Skirven writes, "has given me better service than any one of seven cars I have owned. It has had cruel punishment, as I have shot it through snow, sand, mud, plowed ground and anywhere I desired to go.

"As you know, I am always in a hurry. The little car has had to do most of her work above thirty and on up to, well—don't tell the speed cop that she has done fifty-eight for me. I have not spent a dollar on her outside of tires, oil, setting up the brakes, etc. Get yourself in position, to satisfy my ambition for another Buick."

Prices of Buick Cars for Nineteen-Twenty

3-Passenger Open Model .	\$1495
5-Passenger Open Model .	1495
7-Passenger Open Model .	1785
4-Passenger Closed Model	2085
5-Passenger Closed Model	2255
7-Passenger Closed Model	2695

All prices f.o.b. Flint, Michigan.

A Winter Trip to Mount Rainier

THIS year the Buick was the first car to reach Longmire Springs, the highest point it is now possible for a car to travel on Mount Rainier, in Washington. It is only seven miles from Longmire Springs to the summit of the "Mountain that was God," and further progress was barred because the road was closed by the Government, pending the completion of the new highway.

The trip was made on Washington's Birthday and the party consisted of five people from the Eldridge-Buick Company, Seattle distributors, in a Buick Model H-Six-45 car. At Tacoma they were joined by a party from the Buick dealers' establishment there, in another car of the same model. Later they were joined by Mr. D. L. Reaburn, superintendent of Rainier National Park, who accompanied them to Longmire Springs.

All manner of roads were encountered. Part of the way lay over paved boulevards, at other times the car pulled through deep mud and the last lap of the trip was up the steep grade of the mountain. The party left Seattle at 7 o'clock in the morning and by 11:05 they had reached the snow at the entrance to Rainier National Park. The snow soon appeared over the running boards in places and by the time they reached Longmire Springs, at 12:10, it was 27 inches deep.

Midway Point was reached at 10 o'clock in the morning, and from that time on the journey was accomplished literally among the clouds. Snow storms, rain storms, raw February winds and spring sunshine were encountered by turns and the condition of some of the roads was anything but ideal. Neither car faltered, however, and after spending about two hours at the springs all hands started on the return trip. Seattle was reached again at 7 o'clock in the evening, the speedometer showing a mileage of 214 miles for the day.

Later in the season, this is a very pleasant and a very beautiful trip. But at the time this particular trip was made, it was one to tax the endurance of both driver and car. Still it is just such trips as this that demonstrate the power and "lugging" qualities of the Buick Valve-in-Head motors, and account for their popularity in localities where exceptional power is necessary. Equally difficult trips are being made by Buick owners every day, in all parts of the world and in general and touring service, because it is not always possible for the owner to pick the weather and road conditions when he starts out to reach a certain objective.

When unusual conditions are encountered, all parts of a car are put to a strenuous test. But the real motive force that propels the car, no matter what the conditions may be, lies in the motor, which must have ample power for the mountain road as well as for the city boulevard in order to be completely serviceable.

So the design of the motor becomes the most

important single factor in a motor car, both from the standpoints of economy and power.

In discussing internal combustion motors, it is first necessary to get one fact firmly fixed in mind, namely—that they are all heat engines. In other words, they derive their power by converting the fuel used in operating them into heat, and it is the expansion of the heated gases resulting from each explosion in the cylinders that supplies the impulses necessary to run the motors.

So, as far as the motor is concerned, a gallon

the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water jacketed space there is in a motor, the greater the thermal (heat) efficiency will be, because a smaller area of the cylinder walls

and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases, both inlet and exhaust valves form a part of the combustion chamber, where the heat is greatest, and in consequence it is necessary to water jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. This pocket is water jacketed.

In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water jacketed, it follows that the Valve-in-Head type affords the minimum of water jacketed space that is possible to be secured for any given size of cylinder.

Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the large valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is much more perfect in the Buick motor because the incoming charges are purer.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other types of motors, a quicker ignition of the charge and a smaller loss of heat through the water jackets. The sum of these advantages is more power with less gasoline consumption.



At the entrance to Rainier National Park

of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be.

In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling



Everybody knows
Valve-in-Head
means Buick

With the Buick Vacationists

A Really Long Trip

ON June 27, 1918, Mr. and Mrs. T. C. Johnson, of Seattle, left their home town in a Buick Model E-Six-45. In October, when they motored into San Francisco, they had traveled 10,000 miles.

In the second day's running they struck the sand at Vantage Ferry. A sand storm the night before had played havoc with the roads and they traveled only 200 feet in four hours. Other difficult going was encountered in Montana, where the Yellowstone river was on the rampage.

Twenty-four days after leaving Seattle, including eleven days stopover, they arrived in Chicago, where they had the first puncture on the trip.

From Spokane to St. Paul they traveled over the Yellowstone Trail, from St. Paul to Waterloo over the Jefferson Trail and from Waterloo via the Lincoln Highway.

The middle of August found them in New York City, rather a long distance from home, and from here they turned south to Washington, D. C., Pittsburgh, Wheeling, Zanesville, Ohio, and picked up the Pikes Peak Ocean-to-Ocean Trail at Columbus. "From Columbus to Indianapolis there was a beautiful cement road a joy to travel over," said Mrs. Johnson.

After crossing the Mississippi at Hannibal, Missouri, they traveled on dirt roads to Colorado Springs, visiting the Garden of the Gods, the Petrified Forest and Cripple Creek.

They passed on to Leadville and traveled along the Grand Canyon on a road hewn from the solid rock, scarcely wider than the car and "crooked as a dog's hind leg." Mrs. Johnson says they raced along this road at from three to four miles an hour.

One hundred and fifty miles of Colorado desert were next negotiated, then Utah, then Nevada and finally California.

The total expenses for repairs and extras for the trip were: Two new tires, repairs to battery and brakes relined.

Twice to Colorado

THE May number of the Buick Bulletin reached my desk this morning," writes Mr. V. C. Downing, of the Farmers' Bank of Osborn (Missouri), "and as usual I took the time to look it over at once. I find the experiences related by Buick owners telling of their cross country drives very interesting.

"No doubt they are as interesting to most of the readers of the Bulletin. This prompts me to relate my experiences on two trips to Colorado. I bought a D-Six-45 the last week in July, 1916. On the first day of August I started to Colorado for a two months vacation trip with my family and niece. What I knew about driving a car would make a very small volume. My niece had driven some, however, so we decided to 'fear not' and trusted the Buick to get us through. And it delivered the goods. Brakes adjusted, carburetor adjusted, valves ground once and one puncture was all the work done on the two months trip covering about 5,000 miles. High mileage to the

gallon of gasoline on the return trip from Manitou to Osborn. In August, 1917, I took the same trip without any expense on car. The front casings bought with the car and never replaced, made the second trip. Over 8,000 miles out of them. These are a few of the reasons why I prefer the Buick."

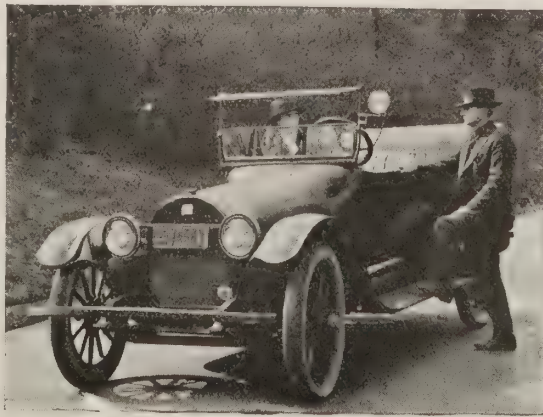


The beautiful vista from Pike's Peak

Beauty is Only Tin Deep

A THOUGHT came to me the other day," writes Herbert N. White, Lieut. U. S. N. R. F., Norfolk, Virginia. "It was Sunday and I was putting the 'old boat' up. I had been motoring all the afternoon and the springlike weather had brought out many other cars, late models, some of them showy and of extreme designs. I took a good squint at my old Buick Six-55. Her old hide had become rough from over three years of continuous service. She did not stack up with new cars in appearance. I was dissatisfied, almost ashamed of her.

"And then a thought suddenly burst upon me—beauty is only tin deep. I slapped the old Buick on the flanks and asked forgiveness, for I knew that under that weather-beaten skin there beat a heart as true as the best of 'em, old or new."



Mr. and Mrs. T. C. Johnson

Care Pays Big

UNDER date of May 3rd, Rev. G. W. Snyder, of Gering, Nebraska, writes: "Four years ago the first of this month I bought of your agent at Humboldt, Nebraska, a Buick Model C-25, four passenger car. Following is some of the record with the car. I think it far better than the average, at any rate. For two years I kept a strict record of all cost and am sorry that I failed to keep it for the other two years. For first two years had not a cent of cost other than gas and oil.

"Expenses in four years: One new storage battery; four new casings with one casing still in use; one new spark plug; one new left front spring. All of the inner tubes that came with the car are still in use except one that a garage man ruined. Four of the casings now in use almost new.

"Mileage and condition of service: 10,000 miles. Two trips, one 737 miles in the swing, not counting any side line running. and

the other 447 miles in winter, bucking snow drifts for more than half of the distance. Up to the end of two years, when I neglected to keep the record further, I had an excellent showing on gasoline mileage. No work done on motor other than cleaning carbon and grinding valves. Motor starts and runs like new.

"When I clean the car folks declare it looks as good as new. It has been as muddy as any, but I never allowed mud to dry on the car.

"I have proven to my own satisfaction that the big expenses are the fault of the driver.

"Yours for a square deal to the Buick."

Navigator Makes Land Voyage

SEVERAL voyages, both domestic and foreign, has the good packet made," writes Captain A. W. Howard, of Brooklyn, referring to his Buick car, "one of which, to St. John, New Brunswick, is worthy of mention. In October last, Mrs. Howard and the writer made a run to Houlton, Maine, via the Ideal Tour Route. The roads east of Bangor were in a most deplorable condition over prairie and swamp, through miles of mud and ruts, but with never a break-down or stop, and the 650 miles to Houlton Square were covered in 25 hours, 10 minutes, running time, Mrs. Howard being the quartermaster for the entire distance.

"We returned via Calais and St. Stephen, over the worst rabbit tracks imaginable, at length reaching home after covering 2,700 miles in two weeks.

"She has the same tires and tubes as supplied by you—never had a blowout. As for her engine room, it has never cost me a nickel. As a beginner I had a few accidents, but they were due to my inexperience as a helmsman and in no way was the car responsible for any outlay of finances whatever.

"After careful study I consider your 'boats' such as to warrant every confidence, more especially by those who navigate their own ships."



The luxuries of yesterday are the necessities of today. The farmer who, a few years ago, considered an open car a necessity and a closed car a luxury now owns a closed car and is convinced that its broader capacity for service makes it the logical means of transportation for him.

Buick closed models have been developed in the same way that the Buick Valve-in-Head motor has been developed—by yearly improvement along thoroughly practical lines. The result is that Buick closed cars today are ideally suited for use by all classes of people who must drive the year 'round, regardless of weather conditions.

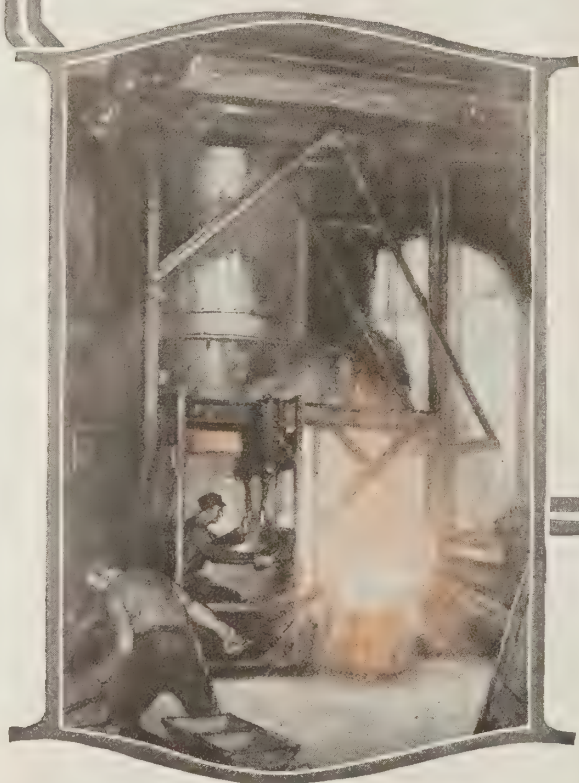
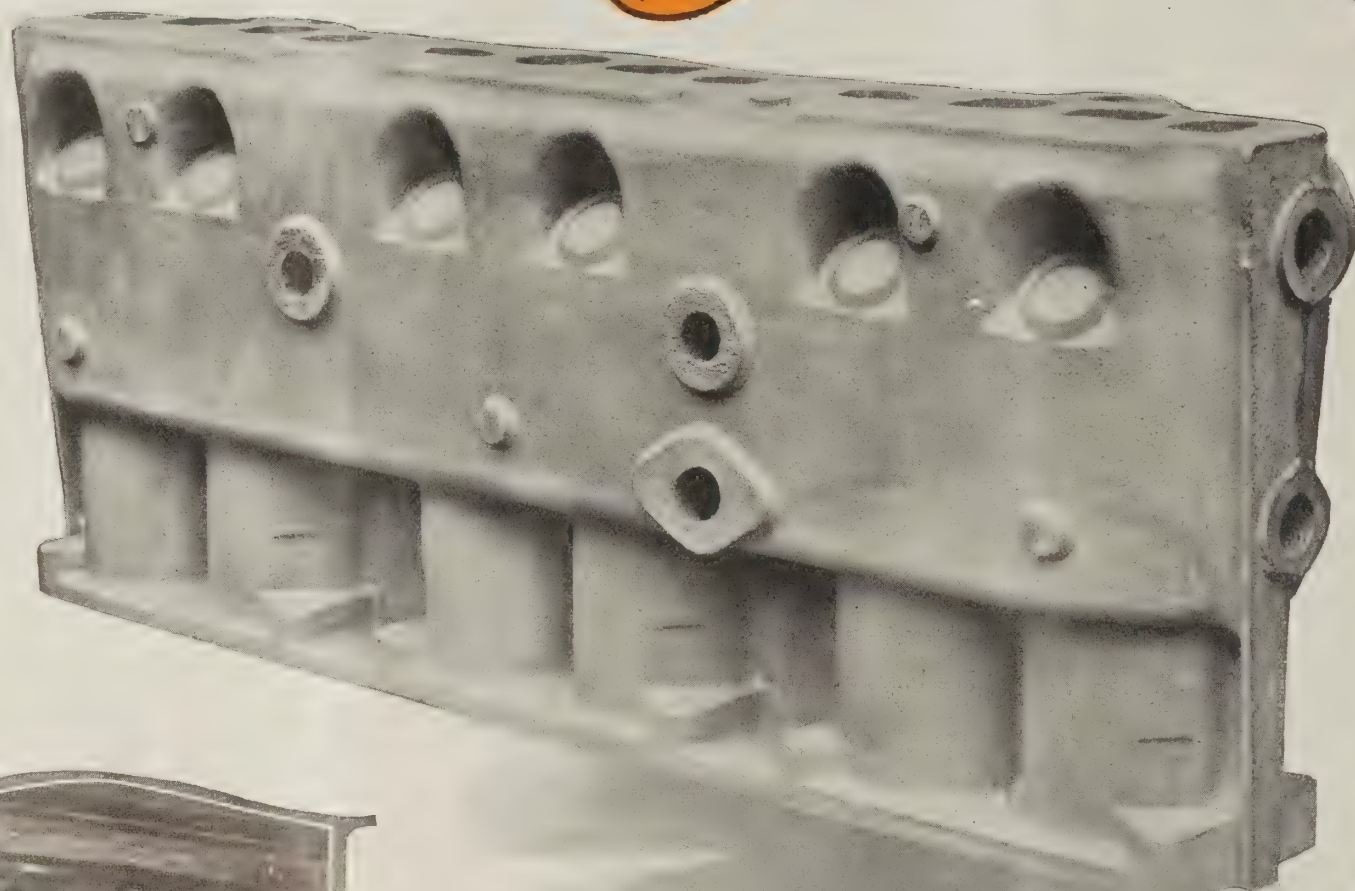
BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities—Dealers Everywhere

Buick

EVERYBODY KNOWS
VALVE-IN-HEAD MEANS BUICK



Fine Buick Foundry Work

One of the finest and best equipped iron and semi-steel foundries in the world has been erected to insure that the castings that form the basis for certain Buick units are true to specifications in size and material. All such parts are cast, tested, machined and completed in the Buick factory. This explains the high quality of Buick cylinders, for example.

They do not warp and lose their shape, nor are they so soft as to wear readily. Nearly twenty years of careful manufacture has taught the Buick builders, not only how to build cylinders that will take full advantage of the Valve-in-Head principle of design, but the material to use in those cylinders to give the longest wear and service.

The Buick factory is more than a mile in length and all Buick units are produced in this mammoth plant

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars
Branches in all Principal Cities—Dealers Everywhere



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Comments by E. T. Strong on the New Buick Line—Page 5



"Seventeen and Seventy"

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Number Eight

J. HOLLISTER, NIGHT CLERK

By FREEMAN TILDEN

Illustrated by Walter De Maris

J. HOLLISTER BENEDICK let the screen door of the Commercial Hotel office slam viciously behind him as he entered. That was his way of showing his contempt for trifles. He wore his derby hat somewhat on the side of his head. That was his conception of the jaunty man of the world. An excellent five-cent cigar protruded at an angle from the left side of his mouth, and a quantity of five-cent cigar smoke exhaled from his nose as he breathed. This effect, in J. Hollister's mind, combined the attractions of affluence and maturity.

All of these things might have deeply impressed the romantic soul of a maiden who had come sixteen miles to the grange fair, and J. Hollister's mother might have thought him a complete young man; but if they were planned to bring exclamations of joy from the old man who stood behind the desk and viewed the newcomer with keen eyes, they failed miserably and wholly.

Fortune watches amiably over J. Hollister Benedicks, however. They never, never realize what other people are thinking of them.

So the young man walked briskly up to the desk, leaned one elbow confidentially on the cigar case, and asked, "Are you the prop?"

Mr. Satterlee, the owner of the Commercial, gazed at the youth venomously, and shouted, "Am I the what?"

"The prop. The proprietor. The main guy. Do you run the place?"

Mr. Satterlee grunted and cast an unfriendly look up and down the young person.

"Well, my name's Benedick—J. Hollister Benedick. I'm all out of cards. Shake!" He held out a white hand, which Mr. Satterlee looked at as though it were a piece of halibut which he hadn't ordered.

"J. Hollister Benedick," repeated the old man, mockingly. "That's a rotten name! Do you part your hair in the middle, too? Take off your hat—let's see." He reached over and tilted the offending derby back upon the ears. "I thought so. Well, I'm the boss. What do you want?"

This was scarcely the line of conversation the stranger had counted on. But he plucked up courage, and brazened it onward. He looked the proprietor in the eye, and said, "I'm your new night clerk. Where'll I put my things?"

This was not what Mr. Satterlee expected, either. He gasped and let the surprised truth

slip out. "Who told you I needed a night clerk? I ain't advertised for anybody."

"Well, you need one, all right," responded the young man. "And I'm him. I tell you how it was. I met your last one going down in the train. Got talking with him in the smoker."

"I s'pose not. I s'pose not. Just what is your particular trouble, now? What was you bounced for—and where was it?"

"Me? Oh, I just got through at the Wil-lows, up at Windsor. Swell place, all right. They didn't fire me. I left."

"Before they could fire you?"

"You guessed it. They said I was too fresh."

For a moment Mr. Satterlee was alarmed for the young man's sanity. He had never heard

such an open confession before. Then he said, "For being too fresh, eh? Well, I believe it. And do you think I like freshness any better than they do up there?"

"Well, between you and me and the door," answered the young man breezily, "You won't like it at first, but you'll like it after a while, when you get used to it."

A gong rang over the dining room door and a moment later the door was opened.

"Supper's on," said the proprietor. "You better go in and eat something. I'll stand you a feed, any way, and talk with you later. The wash room's downstairs."

J. Hollister Benedick put his hat on the big rack near the dining room door, and went downstairs two or three at a time. When he came up, he walked over to the desk, and said, "Say, Mr. Proprietor, have one of the bell hops wring that roller towel into the inkstand, will you? It's a shame to buy ink while that lasts." And he passed into the dining room.

During the supper hour an up-train arrived, and a number of commercial men kept the proprietor busy. But when time permitted, he stood and looked in the direction of the dining room, and chuckled. "J. Hollister Benedick," he muttered. "The freshest of the fresh! And me that's called hell on wheels! Well, J. Hollister, your work is cut out for you, all right." Like a good many harmless human beings, Mr. Satterlee considered himself something of a tyrant. He had taken a determination to show the young Mr. Benedick something about the mailed fist.

On his part, J. Hollister, encamped before an inspiring field of victuals, was wondering what his chances were. "Was I too fresh, or wasn't I fresh enough?" he asked himself. There was something of method in his freshness, you see. But J. Hollister nearly always decided in favor of himself, in case of doubt. He concluded, in this case, that he had been just fresh enough—no more, no less.



"He said you were hell on wheels"

He said he just left his place. So I jumps off at the next station, and comes back. What'd you fire him for?"

"So that's how it was? What else did he say?"

"He said you were hell on wheels."

The man behind the desk almost allowed himself to smile. "He did, did he?"

"That's what he said. Are you?"

"Am I what?"

"Hell on wheels?"

Mr. Satterlee actually grinned. "I don't know. Suppose I am? What of it?"

"Because I said to myself right off, 'I'd like to work for a man like that. There's a man would suit me to a T.' So I hiked right along."

"Well, young man, I'll tell you what I fired that feller for. He couldn't bear to put any cigar money in the drawer. He was under the impression that cigar money was part of his salary. He didn't tell you that, I suppose?"

"No. Well, I ain't that kind."

When the young man came out of the dining room, Mr. Satterlee beckoned to him, and led him into the coat room at the rear of the desk.

"J. Hollister Benedick," he said, menacingly, "what's your first name?"

"John," replied the youth.

"Do you mind being called Jack?"

The youth wasn't sure. "Why?"

"Because you're going to take that middle name of yours and bury it somewhere out back. That is, if you're going to work here. I want a quick handle to get you by. Sometimes I'm just going to whistle—see that you come on the run. And you wear your hat straight on top of your head. Nobody wants to see your face in motion, either. Keep your mouth shut when you ain't spoken to. Most people wouldn't hesitate a minute before kicking you out of the back door. I'm a broad-minded man. I'm going to hire you. Not for an ornament, you understand. You're going to work. You get that, Jack? I guess I am hell on wheels. Anyway, you watch and see. Now I'll show you round."

They started around to the front. Suddenly Mr. Satterlee stopped short and faced the new night clerk. "Have you got any money invested in this hotel?" he asked.

"No, sir."

"It's my hotel, as far as you know?"

"Yes, sir."

"You ain't hiring me, are you?"

"No, sir."

"All right. Come on with me. Let those ideas leak into your head as soon as you can, Jack."

The new clerk trotted around after the proprietor, and saw the hotel. He kept silence. Then Mr. Satterlee said, "I'm going to get a bite to eat. You can go right on the job."

When the proprietor had gone, young Mr. Benedick went over to a railroad timetable that hung on the wall, and ran his finger along the line of figures opposite Briggstown. "Five trains a day each way," he said. "Well, if the boss is handing me a bluff, I'll call it. If he isn't—why, five trains each way is O. K."

J. Hollister Benedick began to stir things up from the very first minute. Two very sleepy-eyed bell boys, who had hitherto spent most of the time devising new ways of occupying their chairs, were kept on their feet during the rest of the supper hour. They began muttering plans of vengeance, and finally, after a whispered conference, came up to the desk and chorused: "We're through. Give us our money."

"Of course you're through," replied the new clerk, cheerfully. "You were through when I came in that screen door before supper and saw you trying to sit on the backs of your necks. You hang around till the boss comes out, and get what's coming to you."

J. Hollister came out from behind the desk, and went to the front door. There was the usual country-town gathering outside. He scanned the crowd a moment, and picked out two of the likeliest looking boys. "You look like bell-hops to me," he said, taking one of them by the coat lapel, and one where the lapel would have been if he had owned a coat. "Come in and get to work, now."

One of the chosen was inclined to hang back, but the clerk pushed him along good-naturedly, and got them into the recently vacated uniforms before Mr. Satterlee came out.

"Well," said the proprietor, "Everything going all right?" He saw the two new occupants of the chairs, sitting bolt upright, as all new employees do. "What are those fellers doing over there?" he asked, turning to the night clerk.

"Why, those are the new bell-hops," replied J. Hollister. "We had a little strike while you were taking nourishment."

"Now, look here—" began Mr. Satterlee, who did not like this assumption of authority; but the night clerk waved him off cordially.

"You ain't hiring me to take sass from bell-hops, are you?" asked the clerk.

Mr. Satterlee admitted the right of this argument. "Mind, though," he said, "Don't get too fresh, Mr. J. what's-your-name."

The night clerk's eyes roved around, looking for something to do. They rested finally upon the line of chairs tilted against the front window sills. They were all occupied, but not by guests of the hotel, if Mr. J. Hollister could read faces rightly, and he had long ago decided emphatically that he could. He called one of the new bell boys and asked, casually, "How many of those chairs are being held down by town boys, Bill?"

"I guess most of 'em," answered the youth. "They always sit there nights."

The night clerk cut up some pieces of stationery into visiting card size, and worked industriously over them for some time. Then he sent the bell boys out to distribute them to the occupants of the chairs. The cards read, rather neatly, in Roman capitals:

: PAY RENT OR MOVE :
HOTEL GUESTS EXCEPTED
Per Order
THE NIGHT CLERK.

There was consternation outside. Some of the more timid citizens sneaked away. Others



"You are discharged this minute," she said

announced their intention of "seeing about this." And one went to look for Mr. Satterlee. Evidently he found him, for very soon the proprietor came down in great anger, and strode toward the desk where J. Hollister was scratching the back of his head with a pen, and trying to think of more worlds to conquer.

"You're fired—" he exploded, before he reached the desk.

The night clerk looked up mildly, and raised a white hand of reproof and interruption.

"Now, don't you be like the rest of 'em, Mr. Satterlee," he cautioned. "That's the way they all do. They say, 'you're fired,' when all they really mean is that there's something they don't understand, and they want it explained. When you really want to fire someone, tell 'em why, and then say, 'Count yourself among the missing.' There's class to that. Now, I ain't fired, and you know it as well as I do. I just cleaned out that nest of hoboes outside so's the guests of the hotel could have a shot at them chairs. Own up now, ain't that in the way of progress?"

Mr. Satterlee was a little dazed with the impudence of this; but he was a shrewd Yankee, and saw a grain of truth hidden away in it. Nevertheless, he had a position to maintain. "Don't you know what you're doing?" he cried. "You'll have the whole town down on me."

"Oh, no," responded the clerk. "They'll be down on me. They'll sympathize with you for having such a fresh clerk."

Mr. Satterlee mumbled something about "getting through in the morning."

"In the morning, Mr. Satterlee," was the breezy reply, "you won't remember it. If you do, you'll thank me."

"Here, Bill," said the night clerk, when the proprietor had gone back to his room, "see if the chef is gone. If he isn't, send him to me."

The bell boy came back with the chef, who stood and looked curiously and rebelliously at the new figure behind the desk.

"What do you want of me?" he asked.

"Only these few words," replied Mr. Benedick. "Don't bake so many potatoes at one time. They get soggy. And trim those chops a little before you put 'em on the fire. That's all."

"Who are you, anyway?" asked the chef, indignantly.

"I'm the man that gives you your time if you don't get wise," replied J. Hollister.

"Before I'd take orders from a whipper-snapper—"

"You'd get through in the morning. That's what you were going to say, isn't it?"

"That's about it."

"All right, Mr. Man. Come around tomorrow and collect. We're running this hotel on a new basis."

The night clerk sat back thoughtfully, and was surprised and grieved to see one of his new bell boys going across the floor with a bull-dog in leash.

"Here, you," cried J. Hollister, "what are you doing with that ki-yi?"

The boy snickered. "Miss Satterlee's orders," he replied, as though that ought to settle it.

"Miss Who's orders?"

"Boss's daughter."

"Take it back to her and tell her to walk it around the block herself. This is no kennel we're running here."

The boy disappeared up the stairs with the dog; and a moment later a good-looking young woman, with flushed face, came half-way down the stairs to a point visible from the desk, and said: "It's all right, Mr. Benedick; I told the boy to take Towzer out for his airing."

"Are you Miss Satterlee?"

"Yes."

"Well, it's all right, Miss Satterlee, I told the boy to tell you he couldn't do it. Sorry, but we need him down here."

The young woman gasped. "Father says—" she began.

"Can't help it, Miss—those are my orders."

Miss Satterlee was very indignant. "You are discharged this minute," she said, stamping her foot.

J. Hollister smiled his most winning smile. "Firing runs in the family," he said. "Are you quite sure you have your tomorrow's geography lesson learned?"

There was an outraged rustle of skirts on the stairs, and the new clerk waited for the annunciator to jangle with a call from the Satterlee apartment. But the ten-o'clock-p. m. quiet was unbroken.

A little later, when most of the guests had retired, except a little party of commercial travelers who were playing auction-pitch in the corner, Mr. Benedick took up a new fine pointed pen, jabbed it once or twice into the potato that served as a pen wiper beside the inkwell, and began to make scrolls and birds, Spencerian system, on a sheet of paper. Finally, after nibbling the end of the pen holder, he got to work, and produced the following, in a business college chirography, with many flourishes and shadings:

On the Job, 10:30 P. M.

Mr. Satterlee,
Prop. Commercial Hotel.

Dear Sir:

Memorandums.

1. New, clean towels for the wash room. The guests positively refuse to dry themselves by waving hands in the air. *(Continued on Page 12)*

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

TO those who are familiar with Buick methods, it is hardly necessary to say that the improvements on the Buick cars for nineteen-twenty, while numerous, are not spectacular or revolutionary. They are good, common-sense changes in design that make for better performance, easier operation, greater comfort and improved appearance. In other words, wherever the demands of increased utility have paved the way for improvements, those improvements have been made.

This is what the motorist wants—a tried and true mechanism to which have been added comforts and conveniences that increase its serviceability, without sacrificing dependability in the slightest degree.

For nearly twenty years it has been the Buick policy to adhere steadfastly to certain principles of design and manufacture, and for the past few seasons the energies of the whole organization have been devoted to the development of six useful models, as being best adapted to the needs of those who are logical Buick purchasers. So in this respect, also, the Buick line for nineteen-twenty is an illustration of Buick consistency.

Six Cars in the Line

THERE are three open and three closed models. And, as always, each of these cars has been improved over the corresponding type of previous years.

Very little change is perceptible in the Buick Valve-in-Head motor. The oiling of the rocker arms has been still further simplified, so that it is as automatic and easy as pouring oil into the crankcase. A simpler construction has also been adopted for the oil pump, without changing its self-thawing efficiency in case of freezing. A heavier fan and improved type of fan belt have been adopted, the latter to prevent the possibility of the belt "climbing" the pulley.

Several changes have been made in the chassis. The speedometer drive has been taken from the front axle and wheel and has been put on the transmission, where it is better protected from dirt and water. This improvement alone is worth many dollars to the motorist. An improvement has been made in the hand brake lever. Adjustable stops have been provided to permit the

regulation of the turning radius of the car. The driving strut rods have been lowered. The steering gear improvements will make themselves felt in the easier manipulation of the car, and the large oil receiving pocket with which the gear is fitted is a decided improvement in its lubrication. The new steering wheel rim is die cast under pressure, and new type tilting steering wheels are furnished on all closed models. A new type filler cap has been put on the gasoline tank to prevent gasoline running over when carrying a full tank. The spring suspension has been separately worked out for all models to insure the best possible riding qualities.

Two Chassis Models

AS in the past, there are two chassis models, practically identical except for wheelbase, springs and some other details necessary to adapt the chassis to the particular body to be mounted.

The body and top changes on the open models are of course along the lines of added convenience, improved appearance and in some cases of both these attributes combined with extra quality that makes for longer life. For example, the waterproof material from which the tops are made is much heavier this year, and the same thing applies to the side curtains. This makes it possible to build the tops and curtains so that they will hold their shape longer, look better at all times, and at the same time afford perfect protection against the weather. All open models have curtain rods, so that the curtains swing open with the doors. Suitable pockets have been provided for storing the side curtains when not in use. Escutcheon plates, hinges, trim rail and hood fasteners have all received attention that has resulted in improved quality. Even the bow sockets have been improved and a more secure method of fastening the rear fenders devised.

The Closed Cars

WE naturally look for greater luxury and refinement in the closed models, and the exacting closed car purchaser will be far from disappointment after inspecting the two Sedans and the Coupe that the Buick designers have developed for the present season.

To begin with, all closed models are lower and correspondingly more graceful than the previous types, but this result has been secured without sacrificing the interior head room.

All solid wooden frames are covered entirely with aluminum, even to the window casings and sashes, doing away entirely with the danger of joints opening, seams cracking and finish checking. The doors are of heavier construction, square pattern, and somewhat wider. The windows are provided with the latest type of patent window adjusters, with self-aligning sprockets and friction clutches to prevent slipping of the chain or rattling. Each door has been provided with combination dove tail and door bumper, and the windows are kept from vibrating by four spring anti-rattlers in each. The windshields have new friction locking devices to make the operation of the rain vision shield more convenient. The seats and cushions have been lowered and rearranged to give greater riding comfort.

The cowls have been re-designed to accommodate pilot side lights.

All closed models are upholstered in high grade textiles of new design, with interior trimmings in perfect harmony.

Some other changes have been made, peculiar to the individual cars, such as the contour of the rear deck and the type of fenders and dust aprons on the Coupe.

Big Production Plans

IT should be borne in mind that these are simply the improvements in the various Buick models for nineteen-twenty. They should not be construed as being the chief selling points of these cars. Rather, they serve to show how closely the Buick designers have followed the trend in motoring refinements, in order to give Buick owners the comfort, convenience and luxury that should rightfully accompany a mechanism so highly developed as the Buick chassis.

This season will see the greatest production ever attained at the Buick factory, and the increase in the number of closed cars built will be particularly noteworthy.

From the rather lengthy description of these changes it will be seen that the nineteen-twenty Buicks comprise the biggest Buick values, as well. For it should be noted that in the case of the open models, these improvements are available at the same prices as prevailed last year, and that the closed car prices have not advanced at all in proportion to the really expensive additions that have been made to the cars.

Another New Buick Foundry

THE Buick factory continues to grow. In the early days of Buick history, a new building or two were added to the factory each year, but the march of progress has now become so rapid that new buildings and machinery are necessary every few months.

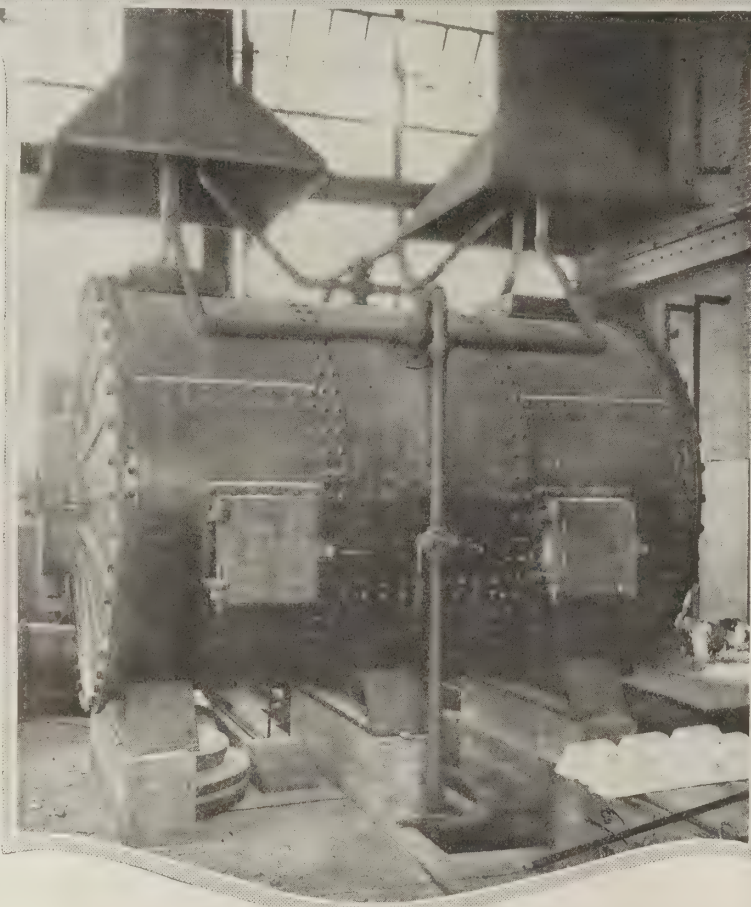
For the nineteen-twenty season, the biggest Buick production in history is planned, and in order to take care of the hundreds of thousands of aluminum, brass and bronze castings that will be required in building these cars, a new foundry has been constructed and equipped for this work.

This foundry is not only much larger than the old foundry, with a vastly increased capacity, but possesses the additional advantage of being designed purely for the purpose of scientific production, incorporating the latest and most improved methods and conveyer systems.

The building itself is made of reinforced concrete, is light and airy, and is equipped with a combined heating and ventilating system that supplies fresh, warm air to all parts of the building in cold weather and pure, cold air during the warm seasons. In this way the air in the building is always free from the smoke and injurious vapors that are so common in foundries.

A railroad siding runs beside the loading dock, clear across the rear of the building, and just across the track is a long concrete sand building for storing sand. This makes a very convenient arrangement and one that insures a plentiful supply of sand at all seasons of the year, as it is impossible for the sand to become wet or freeze in this building. On the other side of the sand building is another railroad siding, with a portable derrick on a flat car for transferring the sand from the freight cars into the building.

The raw material is unloaded from the freight



One of the new furnaces in the Buick foundry

cars directly onto the loading dock outside the stock room, and is brought inside and stored for use. Metals of special formulae are employed for all Buick parts, and the mixing is all done in the Buick foundry, the metal being carefully weighed before putting it into the furnaces. Pig copper is an ingredient of all aluminum castings, giving the metal additional strength and taking away from its natural brittleness. Plastic phosphor bronze is used for bearings and bushings. The aluminum is also purchased in pigs. In this manner it is easy for the Buick Motor Company to control the quality of its metal.

The furnaces are of three types—oil, gas and electric. The oil furnaces are heated by crude oil mixed with air and fed under pressure. The gas furnaces are heated in much the same manner, a special pump being employed to give the extra pressure required. The electric control is of course very simple, through the fingers of the switch.

The largest aluminum furnace has a capacity of 3,000 pounds of metal every half hour.

Nothing is left to chance or guesswork in the preparation of the metal.

Not only is the mixture accurately made, but the heat of the metal is determined with pyrometers before

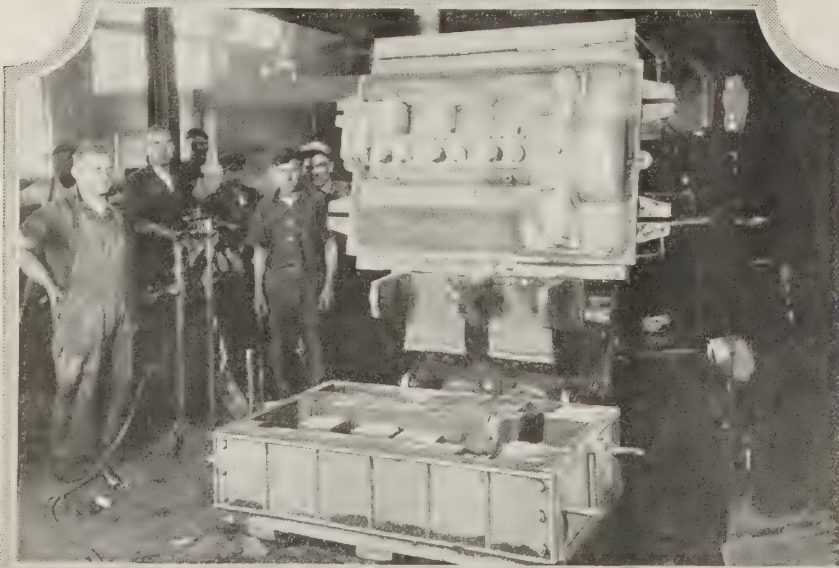
pouring. This is essential to good castings, because metal that is too cool will not pour properly, and on the other hand there is danger of burning the metal if the heat is too great.

The arrangement of the molding floor is noteworthy. There is a row of four electrically operated traveling cranes with eight gangs of men working constantly on crankcase molds. At the far end of each track the lower half of the crankcase mold is prepared, while the upper half is prepared at the other end.

This crankcase casting would be a difficult one to make by hand, but is very simply and easily



An interior view of the Buick foundry showing the tracks on which the traveling cranes operate



The pattern and the mold for the lower half of the crankcase casting



The molds for smaller castings are as carefully made as the larger ones

accomplished with the special machinery installed in the Buick foundry. The lower half of the mold alone weighs 1,200 pounds when finished, and to this must be added the weight of the metal pattern.

This work is done on a special molding machine of large size, termed in the foundry a jarring machine. It consists of two platforms between which is a movable arm supporting the metal pattern. The frame for the mold is placed on one of the platforms, the metal pattern is swung into place and the molding sand shoveled into the frame. The jarring is then done by compressed air, shaking the sand down until it fills all the crevices about the pattern. Then the bottom of the mold is clamped in place, the whole turned over bodily onto the other platform, the vibrator set to work on the pattern until it is free, when the pattern is removed from the sand.

We now have a perfect impression of the metal pattern in the sand and the bottom half of the mold, or "drag," is ready. At this point, the man operating the traveling crane picks up the drag and takes it to the far end of the line, where the top half of the mold, or "cope," is being made. This part is made in much the same manner. The drag is placed on the ground and the core setters put the cores and risers accurately in place. When this is done, the cope is lifted by an air hoist and placed on top of the drag and the whole fastened together.

This completes the work of making the mold, and it remains in its place in the line until after the pouring is done. The hot metal is poured in through a large opening at the end, called the sprue, runs through all the openings at the bottom of the mold and rises until the whole is filled completely with molten metal. In order to insure even distribution of the metal, the risers above referred to have been provided. They are simply a number of holes for the metal to flow through.

When the casting has sufficiently cooled, the mold is again lifted by the traveling crane and taken down to the sand pile beside the molding machine. There it is dumped in such a manner as to spill out the contents. The casting is then lifted by means of a hook and put on a conveyor which takes it to the knockout room on the floor above. This room is provided with grates over chutes leading down to the sand pile. All the cores and the sand that sticks to the castings are here removed over these grates, falling down into the chutes. The casting is sent to the chipping room on the floor below by means of gravity conveyers.

In the chipping room, men with pneumatic chippers remove all sharp points and rough places from the castings, which are then further prepared for machining

by grinding off such spots on emery wheels.

This operation is followed by a thorough inspection and tests for leaks, cracks, sand holes or any other imperfections. It will be noted that the course of the material through

the building has been an unbroken progress from one end of the shipping dock to the other, the successive operations ending right at the points where the next operation begins.

The object of a core is to leave a cavity of any desired shape in the finished casting, in a place where a pattern could not be readily removed. So these cores are made of fine sand, of the exact shape and size required, held together with a core compound which bakes hard at low temperatures and passes off in the form of gas and smoke from the heat of the melted metal. This leaves the core sand in such a condition

that it can be readily broken up by sharp blows on the outside of the finished casting, causing the sand to run out.

Core sand must be specially prepared. The right grade of sand is purchased for the purpose, put through a machine called a tempering machine, mixed with the right proportion of sand that has previously been used in cores, and to this mixture is added the core compound referred to.

The large cores are further reinforced by steel wires placed in the sand, after the manner of reinforcing concrete in buildings.

When the cores have been molded, they are carefully placed on steel racks.

As soon as a rack is filled, it is lifted by one of the electric floor trucks and taken to the core ovens. These ovens are of such a height that the floor truck can run right in. The operator lowers the rack to the floor, the door of the oven is closed and the cores baked at the right temperature. As soon as the baking is finished they are ready for use and are taken to the molding floor as needed.

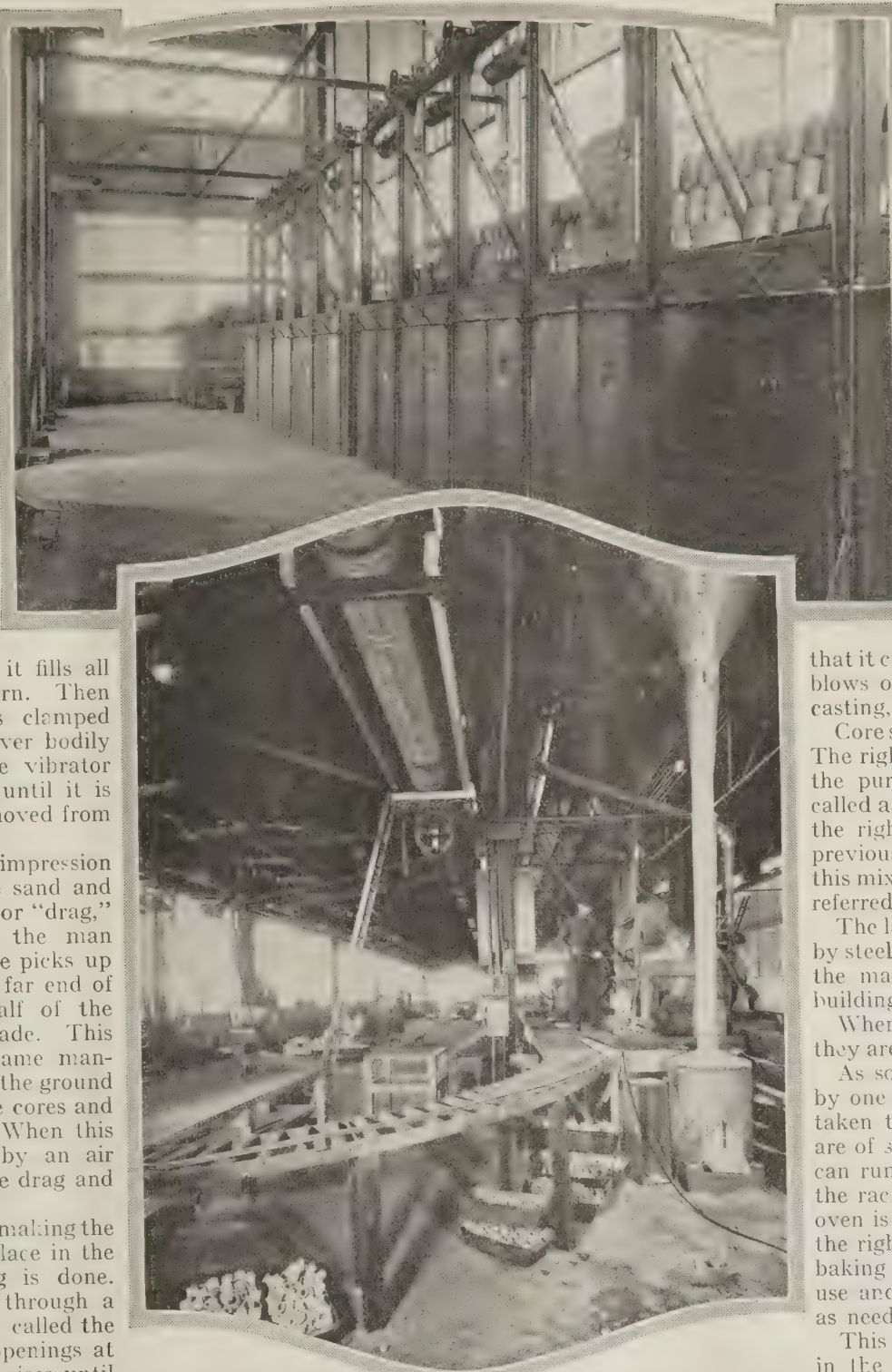
This covers the major operations in the foundry in a general way. The molds for smaller castings are prepared in much the same manner, except that because of their size it is easier to pack the sand in the flasks by hand.

In the case of small castings, such as brass and bronze bushings, the molds are made to cast a large number of parts at one time.

There is also some variation in the manner of cleaning the castings for machining. In

some cases, a number of small parts are placed in a tumbler after grinding and are subjected to a sand blast which removes all roughness.

In connection with this foundry is a complete power house and dynamo room. There are also restaurants for the men and women employes. Apparently, nothing has been omitted that could add anything to the working conditions or the efficiency of the plant system and equipment. The result is shown in the large production obtained and in the high quality of the various types of castings, with a percentage of scrap that is remarkably low when the rigidity of the various inspections is taken into consideration.



The upper picture shows part of the long row of core ovens. The lower view illustrates a section of the conveyer system used throughout the foundry.

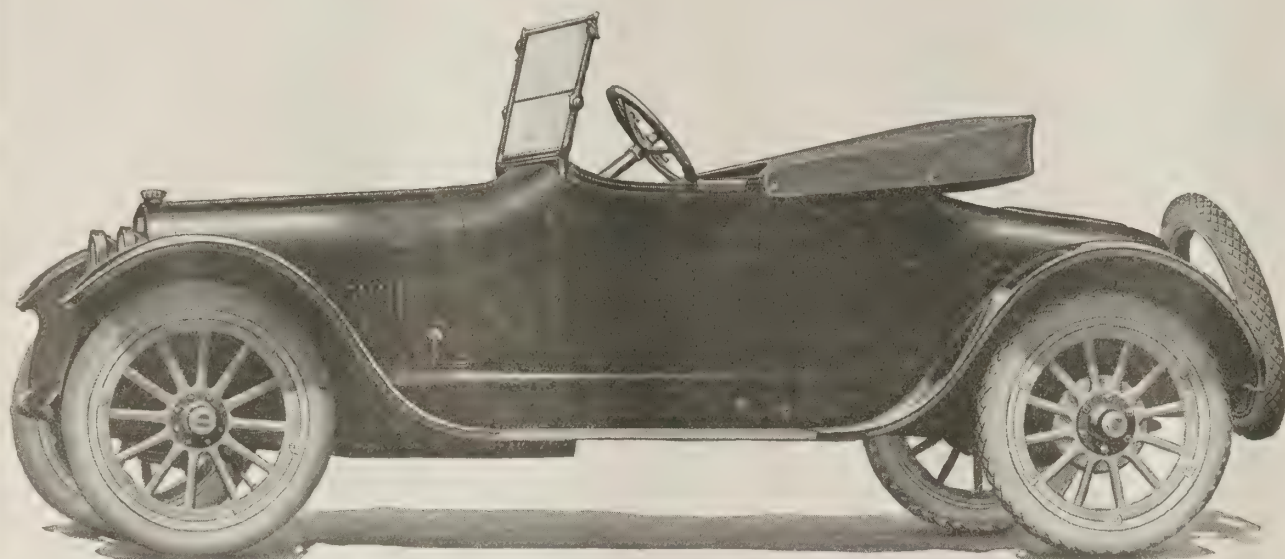


The loading dock with the concrete sand building across the track

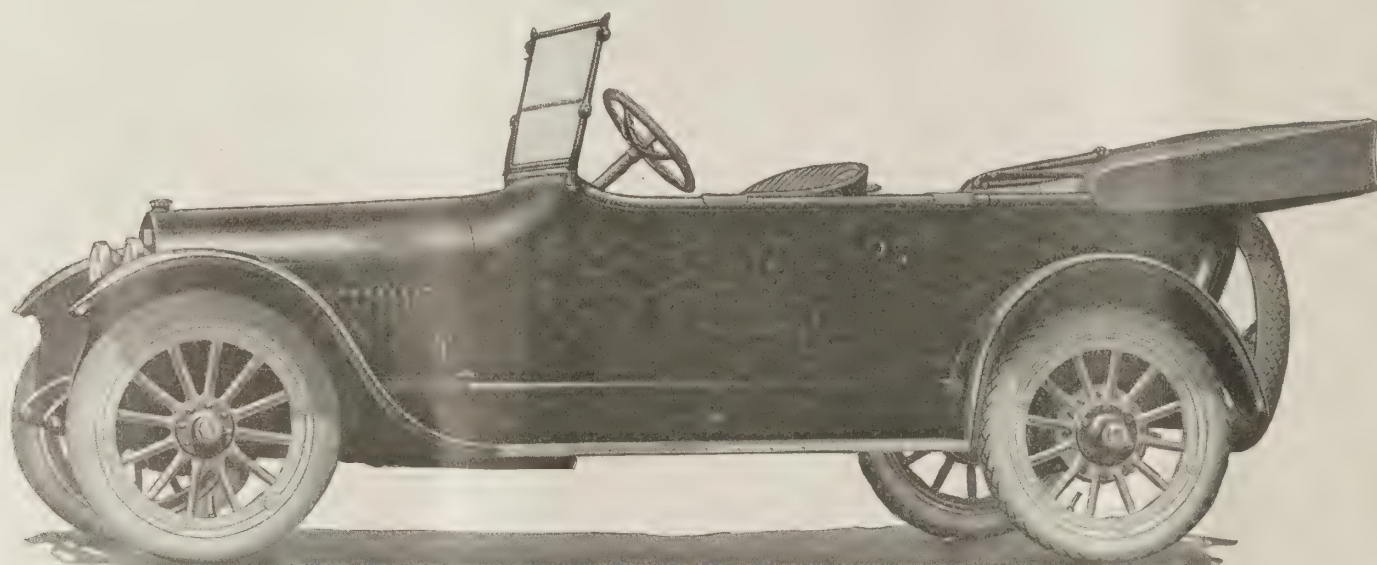
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Buick Three-Passenger Open Model, K-Six-44



Buick Five-Passenger Open Model, K-Six-45



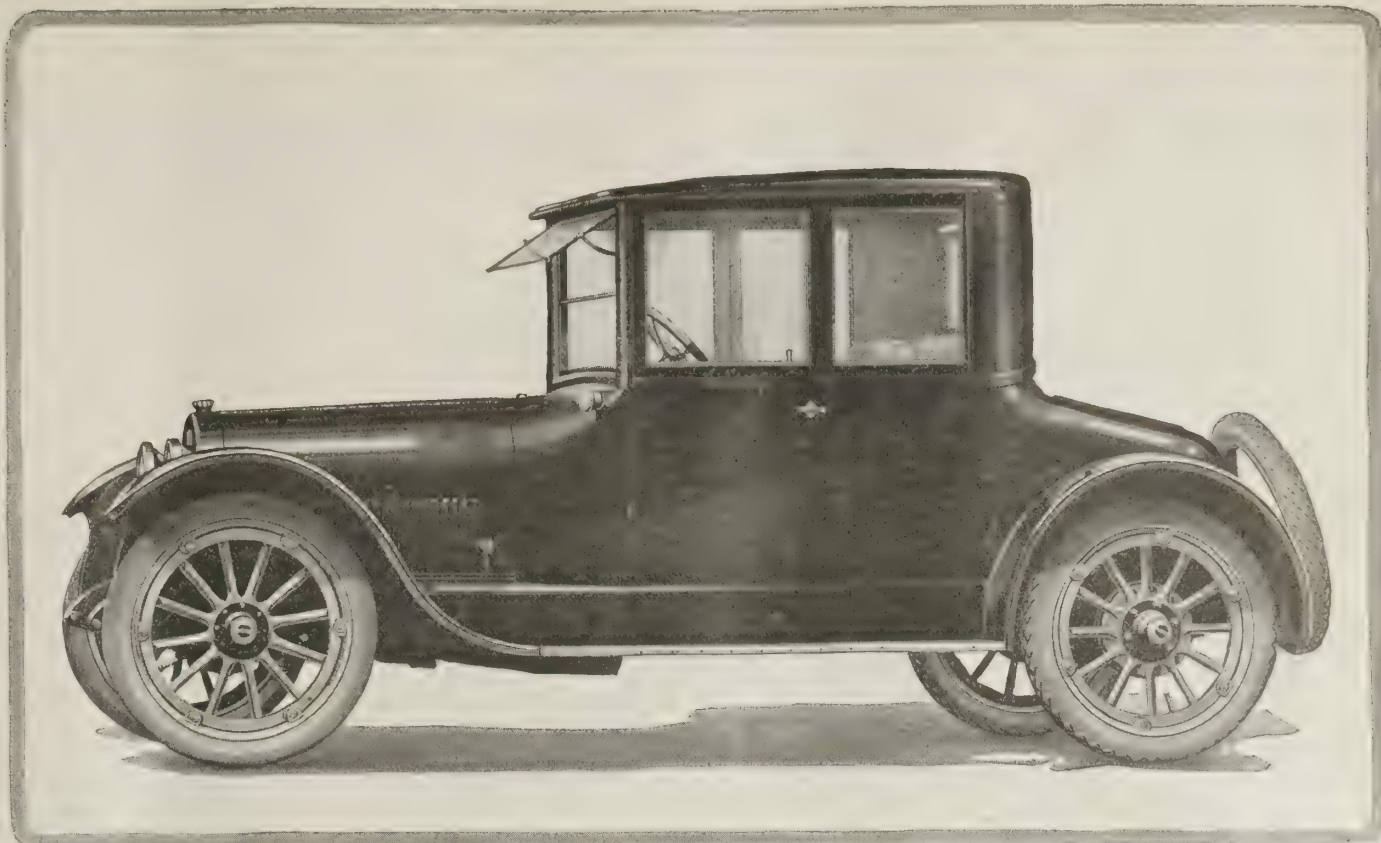
Buick Five-Passenger Closed Model, K-Six-47

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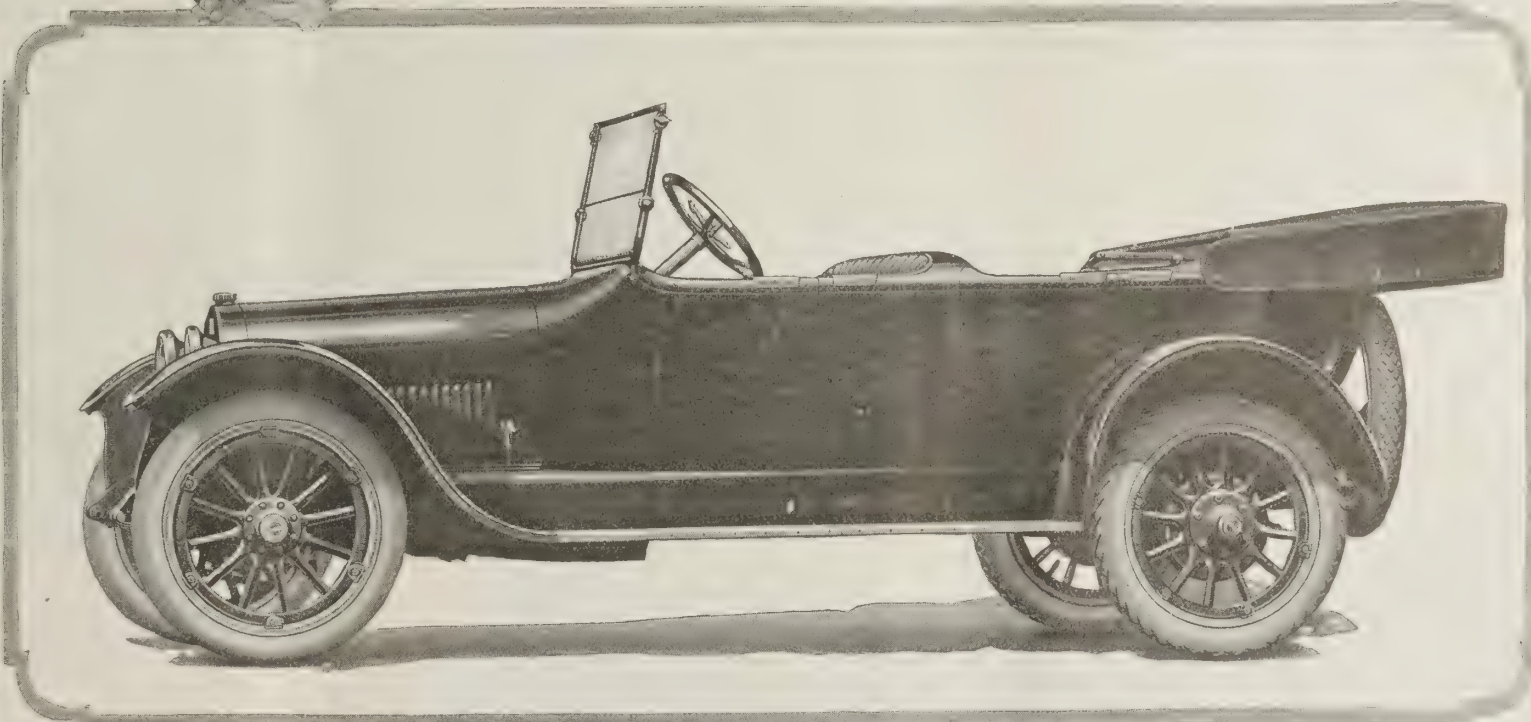
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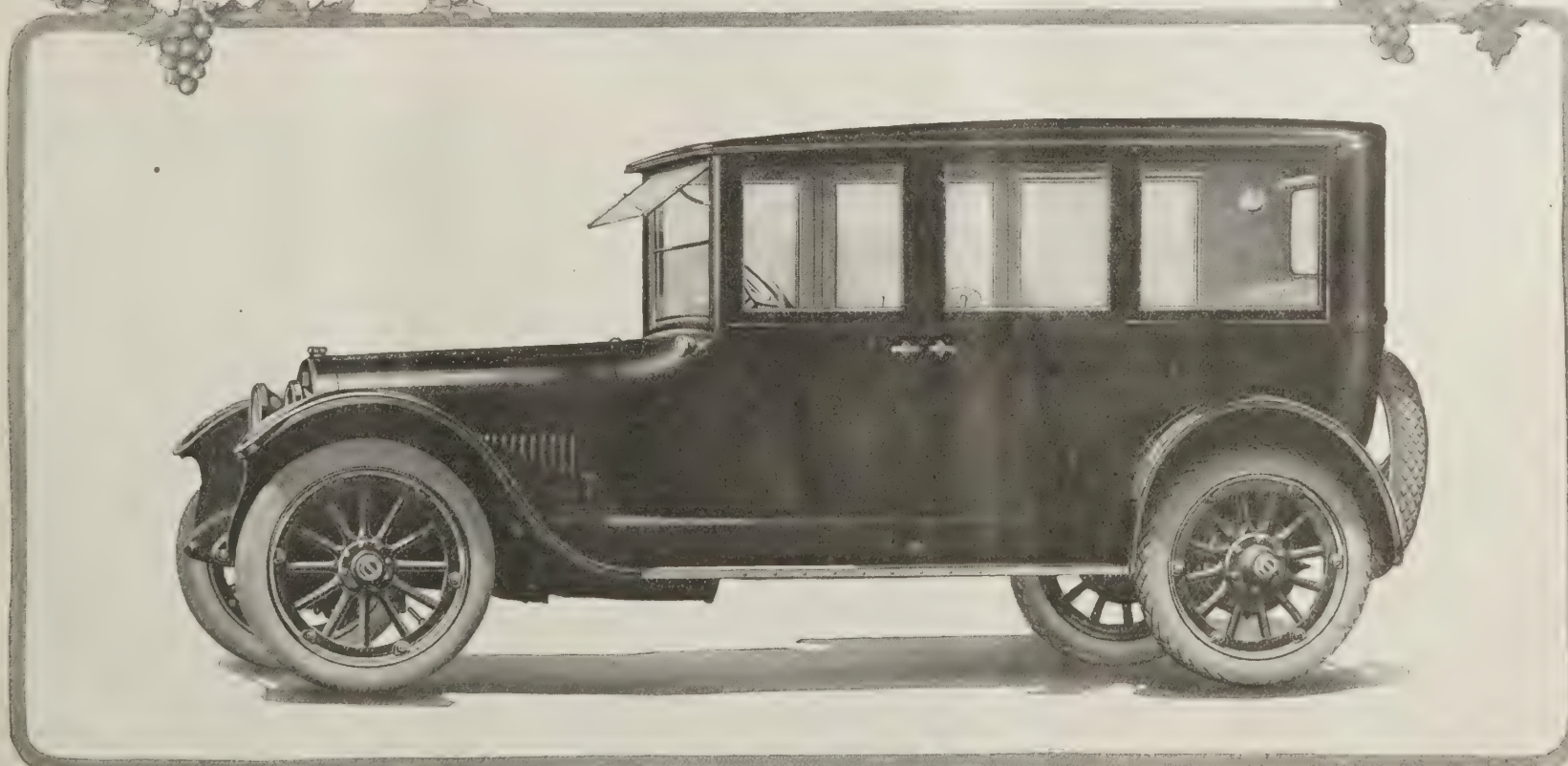
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Buick Four-Passenger Closed Model, K-Six-46



Buick Seven-Passenger Open Model, K-Six-49

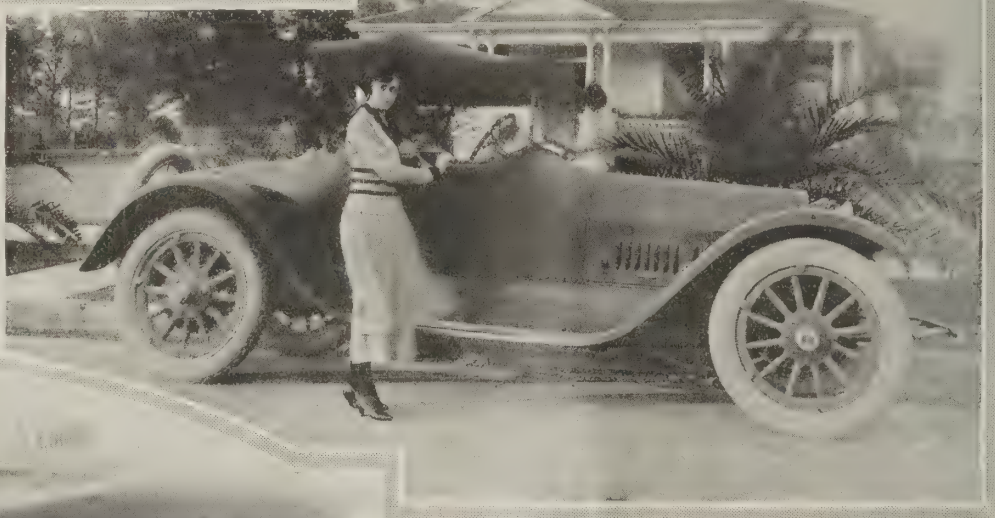


Buick Seven-Passenger Closed Model, K-Six-50

Some of the Prominent Buick



This picture shows Mrs. Henry Mathis, of Beaumont, Texas, standing beside the family Buick Model 54 Roadster. Mr. Mathis has owned several makes of automobiles, but likes the Buick better than any of them, and says that he would not part with his Model 54 for the price he paid for it if he could not get another



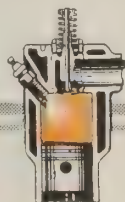
Mr. S. L. Guinn and family make the best of use of their Model E-Six-45 Buick car all the year 'round. Mr. Guinn says that he is more than pleased with his Buick



Mr. and Mrs. S. G. Burnett, of Beaumont, Texas, are staunch advocates of Buick Valve-in-Head cars and have been ever since 1913. They now have in service a Model E-Six-49, a Model D-Six-44, one Model 3 truck and three Model E-4 trucks, all of which are giving entire satisfaction



"It gives me great pleasure to speak a good word for the Buick car," writes Mrs. John I. Pittman, wife of the president of the Jefferson Amusement Company, Beaumont, Texas. "I have been using Buick cars for the past seven years. My first Buick was a 1912 model and I have had four different models all told. I am now driving a 1918 model seven passenger Buick Six and Mr. Pittman drives a Buick Six Roadster"



Owners in Beaumont, Texas

This is not Mrs. Charles Ledwidge's first car, but it is her first Buick—a Model E-Six-49. She says she never realized there was so much difference in automobiles until she bought this car



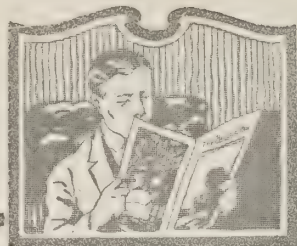
Mrs. Guy Junker is an ardent motorist and a real Buick Valve-in-Head enthusiast. Her car is a Model 54 Roadster and is giving the best of satisfaction. She says she is more pleased with it than with any other cars she has ever owned



Since 1913, Mr. W. P. H. McFaddin, Beaumont, Texas, has been driving Buick cars. His first Buick was a Model 40 and he is now driving a Model E-Six-45. His son drives a Model D-Six-44, his daughter a Model D-Six-45. A Model E-4 truck is used on the farm. It will thus be seen that every part of the family life is well equipped with Valve-in-Head power, and Mr. McFaddin says that he gets more for his money from the Buick than from any other make of car he has ever owned

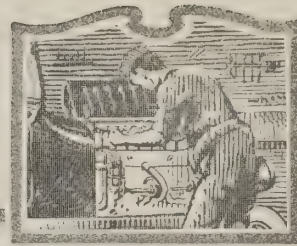


Mr. J. T. Booth is another Beaumont citizen who has been a Buick owner for years. In 1910 he bought a Model 10 and has owned successively Models 29, 40, 31 and 55. At present Mr. Booth is driving a Model H-Six-45. He states that all of these cars have been perfectly satisfactory and that if he were to purchase another car it would be a Buick



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Keeping the Push Rods Properly Adjusted

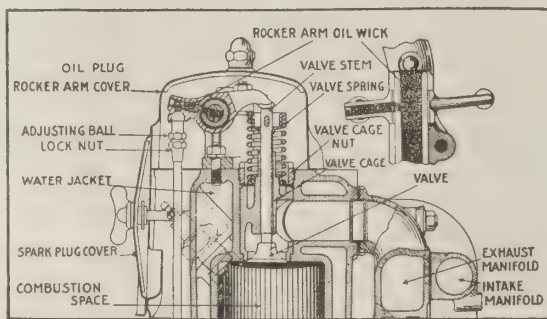
PROPER adjustment of the push rods is important in the efficient operation of the motor, and while the adjustment is simple enough it must be done with sufficient care to see that all push rods have the same amount of clearance, and that this clearance is sufficient to permit of the complete closing of the valves when the motor is well warmed up. The thousandth part of an inch may make considerable difference in the operation of the motor. Under no conditions should the push rods be adjusted too tight. In fact, it would be better to leave them loose, but with a small amount of care they may be regulated to have exactly the right amount of clearance, as given in the Buick instruction book for the particular model car you are driving.

The clearance referred to is between the ends of the valve stems and the rocker arms, which open and close the valves as the push rods are moved up and down by the camshaft.

The reason for this clearance is that steel expands when heated, and enough clearance must be allowed to make sure that the valves will close perfectly under all conditions. And because of the expansion when warm, this adjustment should always be made when the motor is well warmed up.

First of all, you should be certain all valves are clean and properly seated when closed. A good way to clean valves is to place a spoonful of kerosene at the base of each valve stem when the motor is in operation. This will loosen up any carbon that may have collected and have the face of the valve clean.

Second, be certain that all rocker arms are well lubricated and operate freely, after which the timing or lashing of the valve lifters should be checked for correctness and while this process is very simple, first determining the valve is completely closed and then ascertaining the clearance between the top of valve stem and under end of rocker arm, we would suggest a visit be made to the Buick dealer in your locality should you wish to have the valve mechanism exactly timed.



If you are ever compelled to make an emergency adjustment while touring, place the starter crank in its proper place at the front end of motor, turn to the right or in clockwise direction until both valves in No. 1 cylinder (the one next to the radiator) are closed. Then loosen locking nut on push rod located exactly below the ball or upper end. Hold push rod firmly and turn ball nut to the right or left as case may require until you can just pass one of your calling cards between the upper end of valve stem and rocker arm. Then hold ball nut firmly in place and turn up lock nut tightly.

After both valves on cylinder No. 1 have been adjusted, turn the motor over and repeat the same operation on No. 2 cylinder and so on until all are adjusted. If the motor is correctly timed and push rods properly adjusted, it will develop the maximum of power. Upon arrival home, have your Buick dealer properly time and adjust as above suggested.

While timing the motor and adjusting push rods are simple operations when they are understood, it is nearly always advisable to have this work done by one who understands the work well in order to get the most satisfaction, but a careful reading of this article will enable the motorist to properly adjust the rods in an emergency.

J. Hollister, Night Clerk

(Continued from page four)

2. When do the front windows get cleaned? It must have been months since it was done last.
3. I have practically fired the chef. Of course you will support me in this necessary step.
4. That good looking girl on the corner window tables ought to be head waitress. It takes with the guests, believe me.
5. I forgot to ask you whether I can smoke out of the case. Most swell hotels allow this to clerks. Not knowing, I have smoked two ten-centers and a nickel one. Will pay if not agreeable.
6. Does the moving picture show give free passes to the hotel? If they don't we can graft them all right.
7. I didn't let the bell-hop take the dog out. It looks bad, and isn't business. Tell Miss to get wise.
8. This is all I think of now, so will close.

Yours resp.

J. Hollister Benedick,
Night Clerk.

P. S. We can make an up-to-date hotel out of this by boosting and pulling together.

J. Hollister went to bed at 1:30, and rose at 9:30. When he came down stairs, he looked about him with an air of proprietorship, and noted several other things that ought to be done. Mr. Satterlee was behind the desk. J. Hollister saluted him genially, and asked, "Did you get my memorandums?"

The proprietor of the Commercial nodded. When he leaned over the desk, it was with a rather bland manner, but something in his eye—a glint of determination—arrested the night clerk's attention.

"I'm going to borrow a leaf out of your book, young man," said Mr. Satterlee. "I'm going to tell you why first, and then I'm going to tell you to 'count yourself among the missing.' As you say, there's class to that.

"First and foremost, J. What's-your-name, you're too fresh. I've seen 'em fresh, and fresher, and freshest, but you've got 'em beat. That's first and foremost, and there ain't any last and lastmost. Count yourself among the

missing. There's a train up at 10:28, and there's one down at 11:03."

J. Hollister was surprised, but not staggered. He looked at the proprietor smilingly, and replied, "That's the way to do it, Mr. Satterlee. Soft and sweet. That's the style. I'll take the 11:03."

"No hard feelings," said Mr. Satterlee. "I ain't hell on wheels. I'm a pretty easy going man, and I want peace. That's why I'm asking you to try somewhere else. Take these along." He laid a five dollar bill on the desk, and took a handful of ten-cent cigars from the case, and put them on the bill.

J. Hollister took the five dollar bill, the cigars, and the 11:03.

Now this story isn't finished yet. The moral is yet to come. It isn't a moral, though. It's a—well, call it the "kicker" of the yarn.

It is now 8:00 p.m. Eastern time, on the same day that J. Hollister took the 11:03 south-bound.

The town boys are back in the line of chairs outside the front windows of the Commercial—to the exclusion of the hotel guests.

The bell boys who walked out, walked back. One of them is in tow of an eager, straddling bull dog on Main Street.

The chef did not leave. The potatoes were not soggy tonight—but they will be tomorrow.

Mr. Satterlee is behind the desk. He is saying to himself: "He would have been all right, if he hadn't of been so fresh. He had some good ideas. But what a nerve!"

J. Hollister Benedick is in consultation with the proprietor of a hotel thirty miles farther down the B. & L. R. R. He is saying, "I could have put the Commercial, up at Briggstown, on its feet, if they had let me. Too much interference there for me."

Better Still

"Have you sent to the agricultural college for the bulletin on How to Increase Egg Production?" asked the state leader of a poultry club in writing to one of her club girls.

"No, we don't take the bulletin you wrote about," came back the answer, "but we take the Buick Bulletin."

(The above was submitted by Miss Bertha G. Schmidt, Secretary of the Copper Poultry Club, Topeka, Kansas, who vouches for it as an actual occurrence).

Two Buicks Give Satisfaction

ON February 16, 1918, Messrs. Edward N. and Robert C. Morgan, of Paulsboro, N. J., purchased their first Buick car, a Model D-Four-35. "We drove it every day for 14 months," they write, "covering over 2,700 miles, without a bit of trouble or one cent of expense for repairs. When we sold it, it was as good as the day we received it. We then bought a Model H-Six-45 which we are perfectly satisfied with and we can honestly recommend the Buick to anyone who wants a car for service, appearance and reliability. We sure do boost the Buick."

No Repair Bill

EACH month I enjoy reading the Buick Bulletin," writes Mr. L. M. Baldwin, of Kenosha, Wisconsin, "especially the letters from various Buick owners telling of their experiences with the different models that they own.

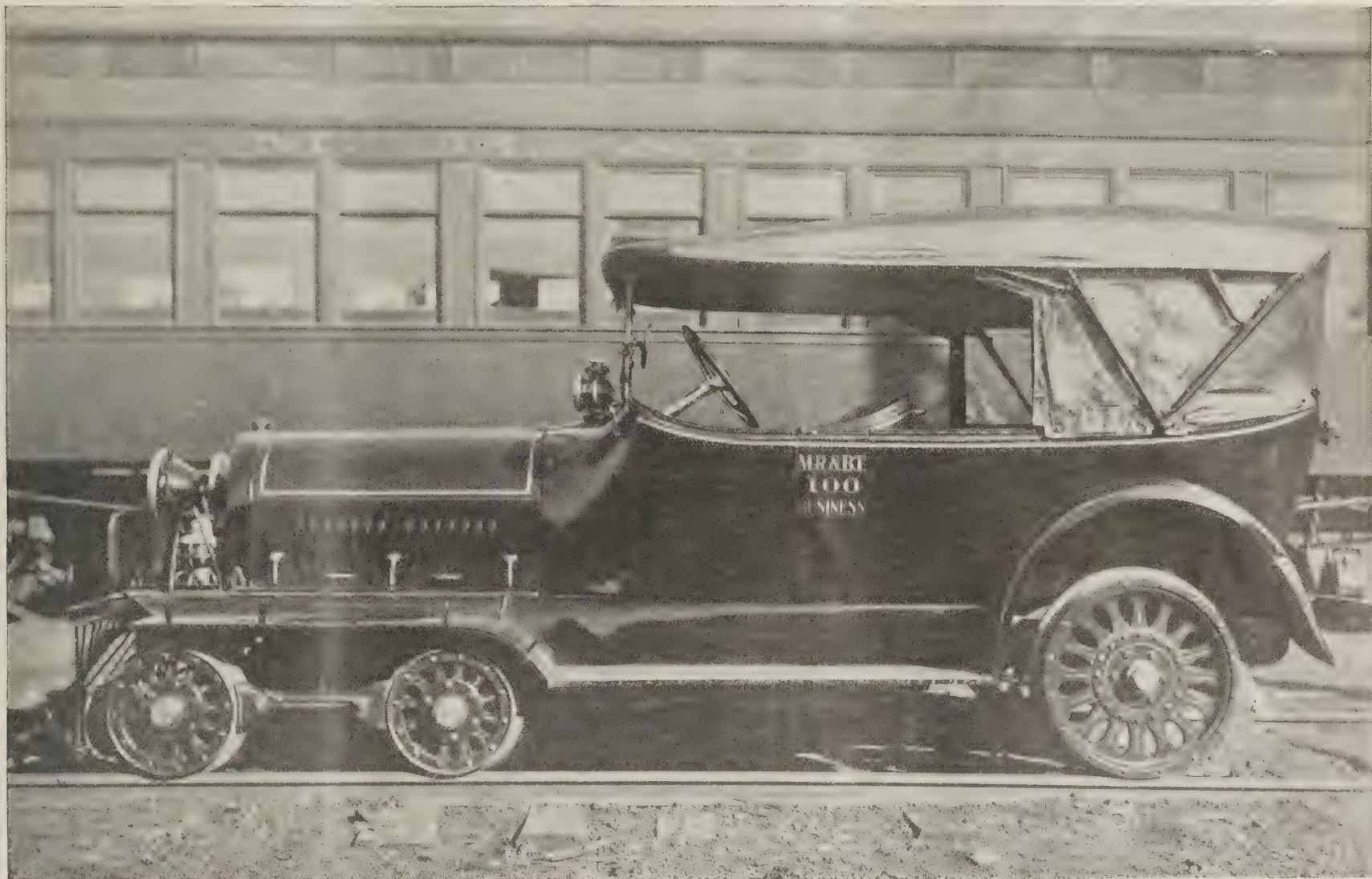
"Before I ever bought a Buick I had always heard that they were good cars, but now I know it. I have always maintained that any car as a rule will run the first year, but it is the second, third or fourth year before the owner actually knows whether he has got a real car or not.

"In March, 1915, I bought a Model 10. It was then six years old and had been owned by five different people. During that time it had been driven about 30,000 miles. I had the engine overhauled, drove it over 4,000 miles and a year later sold it for \$150.00 more than I paid for it. And the remarkable part of it all is that it is still running around the city apparently as good as ever, even though it is ten years old.

"In July, 1915, our firm bought an early Model D-Six-45, the first Buick Six in this vicinity, and although it is nearly four years old and has been driven over 15,000 miles, it is running better today than it ever did. It is on the job every minute and not even once has the engine ever refused to start.

"About two years ago we replaced the old style manifold with a twin manifold. Outside of that \$15.00, our total expense in four years on the engine for replacement of parts that have actually broken or worn out is \$2.30. One of the original tires is still on the car and the original storage battery is still in service."

A Buick for Railroad Use



HERE is a Buick car that weighs 5,800 pounds and makes 12 $\frac{4}{5}$ miles on a gallon of gasoline. The motor carries the excess load easily and the car is giving perfect satisfaction to the officials of the M. R. & B. T. Railroad, for whom the car was changed over by Mr. John Kehrman, master mechanic of the railroad company. The car operates from Bonne Terre, Missouri, headquarters of the company, and is used all over the company's lines.

The first impression of the car is that it is simply an interesting novelty, but on mature consideration it brings up a phase of motoring conditions that is not often dealt with because the average person simply takes it for granted.

Here is a Buick car with a motive power just about the same as all of us have been accustomed to using in daily service. Yet that motive power is successfully propelling more than double the weight that the average Buick power plant is required to move and is doing it economically.

The point is that the motoring conditions are different. This railroad car never leaves the rails. Its roadbed is always the same—smooth, even steel rails with only a slight grade here and there and never a rut or a mudhole or serious impediment to momentum.

But the average motor car is not so favored. It must traverse the roads that lie in its path, whether they are smooth or rough, sandy or muddy, level or steep.

We drive along a country road and encounter a stretch of sand, and we can feel the car losing its momentum. Habit induces us to shift the control lever into second speed, but we rarely think of the additional work that has been suddenly thrust upon the power plant, or the vastly increased strain put upon the chassis mechanism. And our car pulls us safely through this stretch of sand, but we are not surprised, because it is what we have become accustomed to. We expect such things of our motor car.

Yet we could ask for no better illustration of the reserve power and flexibility that must be

This Buick Model D Six-55 has been altered by Mr. John Kehrman, of the M. R. & B. T. Railroad, Bonne Terre, Missouri, for railroad use. Patent has been applied for.

built into a car that is to be used for miscellaneous service. Where the big car here illustrated must work continuously under more than double load, our own car must frequently work under a load that is at least four or five times normal, and without the benefit of momentum when it needs that momentum most.

From the engineer's standpoint, this condition has become an old story. It is the thing he is expected to solve. To him it is a matter of design and efficiency.

In discussing internal combustion motors, it is first necessary to get firmly fixed in mind, that they are all heat engines.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be.

In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water jacketed space there is in a motor, the greater the thermal (heat) efficiency will be, because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more com-

pact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases, both inlet and exhaust valves form a part of the combustion chamber, where the heat is greatest, and in consequence it is necessary to water jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. This pocket is water jacketed.

In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water jacketed, it follows that the Valve-in-Head type affords the minimum of water jacketed space that is possible to be secured for any given size of cylinder.

Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the large valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is much more perfect in the Buick motor because the incoming charges are purer.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other types of motors, a quicker ignition of the charge and a smaller loss of heat through the water jackets. The sum of these advantages is more power with less gasoline consumption.

With the Buick Vacationists

You Can't Wear Them Out

YOU may be interested," writes Mr. D. A. Daland, of Howells, N. Y., "in a brief account of my Buick Roadster, Model C-24, that I purchased from my family physician in the summer of 1917, after he had used it constantly for two years in his daily practice. I have used the car every day since, weather permitting, and have visited in the car, since last summer, fourteen states.

"From my home I make frequent trips to New Haven, Conn. (120 miles). In July last, made the picturesque trip over the Mohawk Trail, in Massachusetts, the Berkshires, continuing over into the Catskills. On that trip I covered approximately 500 miles and did not have the slightest trouble with the car.

"In December last, I decided to spend the winter in Joplin, Mo., and as my wife would not consent to go without the little Roadster we decided that the car should take us there. We left our home on September 10 and completed the journey, 1590 miles counting numerous detours, in 22½ running days.

"Our route took us through Pennsylvania, Maryland, West Virginia, Ohio, Indiana, Illinois to St. Louis, and from that city 440 miles via the Boone Lick trail and Jefferson Highway south to our destination. While in Joplin, made trips to Kansas, Oklahoma and Arkansas.

"There is always the same comment when I tell people the car I am driving. It is, 'You can't wear them out.'

Fall Trip to Indiana

I HAVE a 45 horse power Touring Light Six Buick which I have driven for the past three years. Last September, accompanied by Mrs. Hess," writes Mr. Carl Hess, of Malvern, Ohio, "we drove out to Ft. Wayne, Indiana. Our trip made in all 885 miles, and for 25 miles we drove through mud mostly axle deep. The best part of our trip was, we came home on the same air which we left on and no breaks at all. The motor was running as quietly as when we started.

"That is why I have a good word for the Buick. If I were to buy a dozen cars, they would all be Buicks. I would say this to anyone who wants a durable car, I would advise them to buy a Buick."

Climbs Pike's Peak

MR. GEORGE LOGAN, of Cairo, Ill., has a Buick Model D-45 three years old, in which he made a trip from Cairo to Pike's Peak. "It really seemed to enjoy going up the Peak as much as we did," he writes. "On our 3,000 mile trip our repair bill was \$1.50.

"This summer it goes to Michigan and it will come back ready for city driving."

A Difficult Association Run

MR. FRANK T. REYNOLDS, Secretary of the Georgia State Automobile Association, Atlanta, wrote the following account under date of June 24, 1919: "It gives me pleasure to write you that of the three cars that successfully made the northeast Georgia run of this association last week, two of them were Buicks.

"I have made many tours in various states, over all sorts of roads and semblance of roads, but the ones in the fourteen mountain counties traversed on this tour were the roughest and most trying of my experience. It was the most severe of tests. You certainly must have pride in the performance of those two cars."



Mrs. W. C. Horton, of Windsor, Georgia

Tours Cover the South

MRS. W. C. HORTON, of Windsor, Georgia, is an ardent Buick motorist. Since last November, when she purchased her car, she has driven an average of over 1,000 miles per month, principally in tours which she has undertaken with herself at the wheel, throughout the south from Tennessee to Florida, during the past winter.

Mrs. Horton crossed the Blue Ridge Mountains in Georgia several times, without meeting any difficulties which she and the Buick could not overcome.

Mrs. Horton is the wife of Mr. W. C. Horton, President of the North Georgia Bank and Trust Company and of the Bell Overall Company.

"Real Buick Service"

I JUST thought I would tell you of some real Buick service," writes Mr. M. O. French, of Pittsburg, Kansas. "I bought a Model 10 car in 1910, and drove it 33,000 miles. Then a Model 29 and drove 135,000 miles. Then a Model D-45, purchased June 17, 1917, and have 19,560 miles on my speedometer now and never a valve ground yet.

"I think the snow drifts and mud this past winter were certainly a trial for any car. Satisfied service and a starter always ready to start, and no repair bills, either."



With the Canadians in Siberia

A Trip Through Illinois

SINCE our purchase of a Buick D-45 in August, 1916," writes Mrs. Mathew J. Gross, of St. Joseph, Mo., "we have driven our car constantly both winter and summer and have made several long trips, one being a trip of 1,100 miles through Illinois.

"Up to this time we have driven 12,800 miles and have had practically no trouble. We are still going on two of the original tires and just took off the third one for fear we would have a blowout, as we have never had one with one of these original tires. They have all worn down evenly through each layer of fabric.

"We have never so much as had our battery tested, but the minute we press on the starter it is off and as the lights are very bright, evidently the battery is still in good condition. I am, of course, careful about filling it with distilled water every two weeks. We use very little oil.

"This is just to let you know the Buick is surely all right and we are surely boosters for it."

Consistent Performance

IN December, 1916," writes Mr. Charles E. H. Brown, Waynesboro, Pa., "I purchased one of your Model D-44 Roadsters, ran same during the year 1917, 12,785 miles, average miles per gallon of gas 16.23 over all kinds of roads, going anywhere I was compelled to go. In the early part of 1918, I sold the car and bought a Model E-44 Roadster, ran same during 1918, 12,606 miles, average miles per gallon of gas 16.58, again over all kinds of roads, from sand and mud up to the hubs to the finest cement and macadam, not sparing the car in the least and always going where I desired. I have this car now and find the upkeep very small. Am doing an average of about three days' work in one over former mode of travel—rail, horse and walking. The Buick car is a very satisfactory car for me."

A Long, Hard Trip

FEW people choose March as a good month for touring. Mr. Earl Hodges left Carrollton, Ill., March 22, 1919, in his Buick Model E-44 and arrived in Red Lake Falls, Minn., on the 31st, a distance of 724 miles, a great part of the traveling being done in low and second gear.

The report of the trip shows the best road conditions encountered were called "fair," and from that graded down to "impassable to anything but a Buick."

From Siberia

MR. JAMES RIDGWAY, formerly of Newton, Massachusetts, wrote the following letter from Vladivostok, Siberia, where he has been serving with the Canadian Expeditionary Force:

"I suppose you will be surprised to receive this picture. Your car has been of great service to us here in Siberia, with the Canadian Expeditionary Force. For greater and better service we could not ask. We have no trouble at all with them and they are really light on tires, considering the rough roads that we are forced to go over day in and day out."



PULLMAN COMFORT, unhampered by time tables and iron-clad schedules, is the lot of those who travel by motor. In consequence, this mode of transportation opens up new opportunities for recreation, enjoyment and education to the tourist.

These opportunities are in direct relation to the character of the car selected.

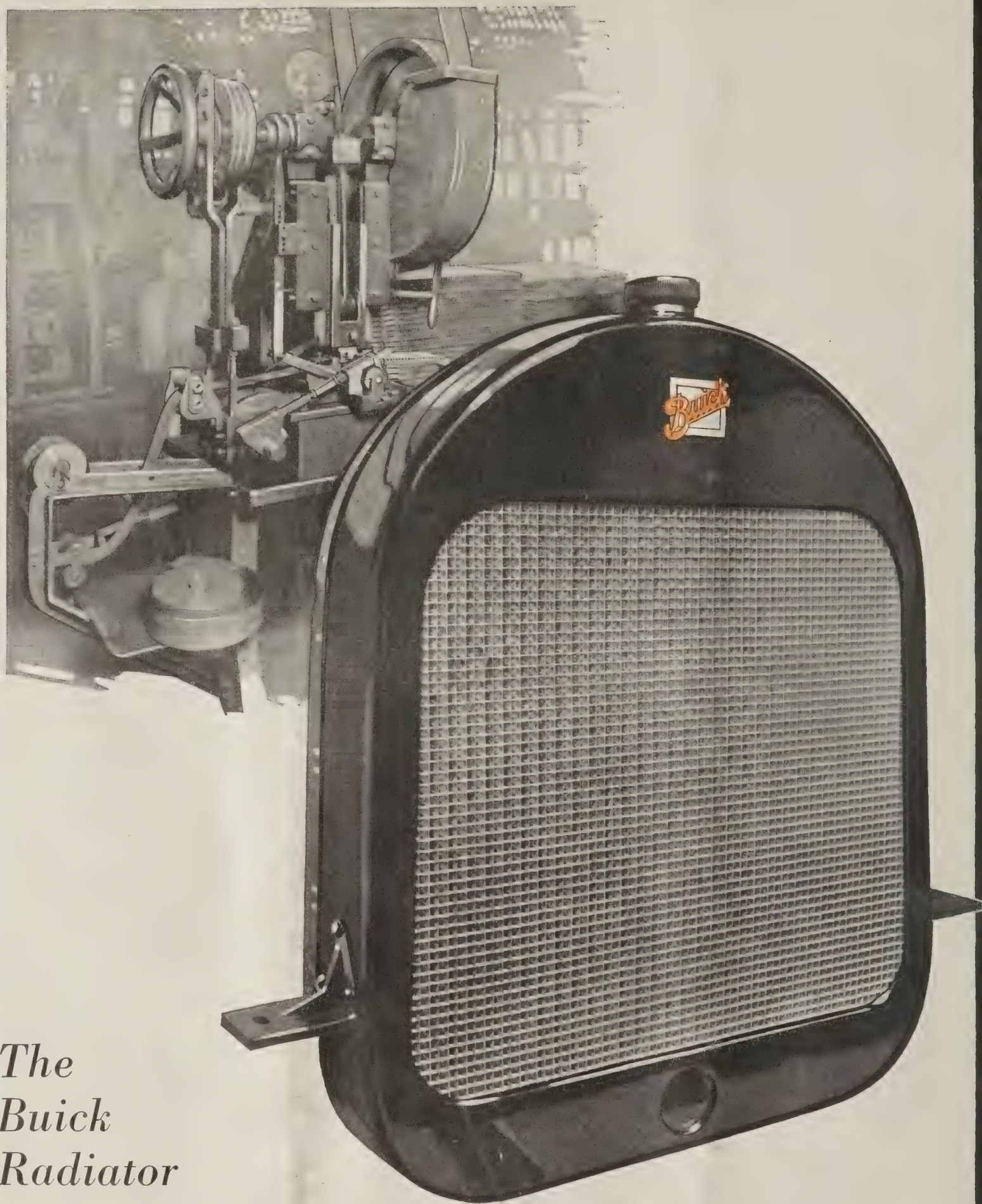
A completely satisfactory tour bespeaks a completely satisfactory motor car.

Wherever you go you will see Buick tourists, because the Buick car has ample power, reliability and endurance, with the touches of luxury and convenience that are necessary to genuine comfort on the long tour.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities — Dealers Everywhere



The Buick Radiator

is absolutely unique in radiator construction. Not only is it built complete in the Buick factory, under patents and on specially designed machinery, but it possesses marked advantages over other types.

The cells are so crimped as to give a vastly increased cooling area on the thinnest surface exposed to the air, yet the ends of the cells are of more than ordinary strength and are held together in a firm unit by pure solder.

A noteworthy feature of Buick radiator design is that if any portion of the radiator should become damaged, a temporary repair may be made without interfering with the circulation in the undamaged portions, and a permanent repair can be made by removing the damaged cells and soldering a new section in place.

This makes the radiator as good as new, and at a minimized cost to the owner.

The Buick factory is more than a mile in length and all Buick units are produced in this mammoth plant

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities—Dealers Everywhere

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BU

UNION-PAID SECOND CLASS

SEP 10 1910

THE Buick BULLETIN

Published by the Sales Department
of the Buick Motor Company

SEPTEMBER 1910

FIV

FREE
AIR

OPY



In this number—An Unsuccessful Suicide—By Montague Glass



*Warm lights are on the sleepy uplands waning
Beneath soft clouds along the horizon rolled,
Till the slant sunbeams through their fringes raining
Bathe all the hills in melancholy gold.*

*The moist winds breathe of crisped leaves and flowers
In the damp hollows of the woodland sown,
Mingling the freshness of autumnal showers
With spicy airs from cedarn alleys blown.*

*Beside the brook and on the umbered meadow,
Where yellow fern-tufts fleck the faded ground,
With folded lids beneath their palmy shadow
The gentian nods, in dewy slumbers bound.*

*The little birds upon the hillside lonely
Flit noiselessly along from spray to spray,
Silent as a sweet wandering thought that only
Shows its bright wings and softly glides away.*

—Sarah Helen Whitman

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Volume Seven

Flint, Michigan, U. S. A.

Number Nine

AN UNSUCCESSFUL SUICIDE

By MONTAGUE GLASS

IT is much mistake for say all Italians are musical people. Me, yes, I am musical, but Mr. Lo Iacono, he has got no heart for music. Only does he know bank and passage ticket business, and no more would you expect to find a beautiful daughter of such a man, like Miss Rosa Lo Iacono, as a silk purse in a sow's ear. She is so different from her father, like chalk from cheese, she so poetic, so simpatica, he so brutal, so disgusting.

Myself I am of the employment of book-keeper for Mr. Lo Iacono, on Park Street, and of acknowledged excellence in chirographic art, also honest as the day. Mr. Lo Iacono trusts me implicitly with the money in the window and always calls me to help him count it every morning and evening. Similarly when he goes out in the daytime, we count it again together before he goes out and also when he comes back. The safe is kept always locked.

Mr. Lo Iacono knows also that of social standing, mine is infinitely superior to his own, but in his brutal, disgusting way, he professes to believe that money is the object of matrimony. Thus he is telling me that Rosa shall marry millionaire, and knowing that my father is in citrus fruit business in Palermo and my mother's sister is married to the youngest son of Cav. Alessandro Colombo, of distinguished Milanese nativity, he asks me: "What is family? Nothing. Young fellows could be princes, and if they have not the price, they cannot marry my Rosa."

"You are the judge, Mr. Lo Iacono," I say, and I do not feel bad, on account I am only seeing Miss Rosa Lo Iacono once or twice, and therefore I am not smitten as yet.

Finally I go to grand ball of Guiseppe Barone Association at the Harlem River Summer Garden and Casino, of which society Mr. Lo Iacono is one of the honorable vice-presidents with Mr. Marty O'Sullivan, Ald. Henry S. Cohen, Assemblyman Charles Aaronowitz, and Mike Cardello, president Italian-American Liquor Dealers' Association. There I meet again Miss Rosa Lo Iacono, and as I am elegant dancer, second to none, we spend pretty near the whole evening together.

It was typical case of love at first hand, and I call to see Miss Rosa Lo Iacono next evening, at flat on 116th Street, where Mr. Lo Iacono comes to the door. I say I am come to see Miss Rosa Lo Iacono and so he grunts like he is displeased to meet me, and I go into front parlor. Afterwards Miss Lo Iacono performs on pianoforte "Grande Fantasia on Aïre from Norma, by G. Bellini," and serves caffè granite with several pieces of cake. In the morning Mr. Lo Iacono says I should not put myself to trouble of calling again at flat, unless I would like to find situation as bookkeeper elsewhere.



"It was a typical case of
love at first hand"

"Very well, Mr. Lo Iacono," I answer. "I do not consider myself so low that I am afraid I cannot find situation elsewhere. I am as you know a second-to-none bookkeeper but at similar time, I do not feel disposed to go against your will, and so I do not call again."

This I am saying to Mr. Lo Iacono, but at

similar time I am thinking differently. Indeed, I am resolve to see Miss Rosa Lo Iacono at first opportunity, and so I am waiting next Sunday after half past ten at the big church on 116th Street. There I see Miss Rosa Lo Iacono, and we go for walk up First Avenue and back.

For some weeks we meet in disguise, until Miss Rosa Lo Iacono is resolve she shall brave everything for my sake and will tell her father that very night: "I love Rocco Esposito, and I intend to marry him nolens volens."

"This is inadvisable," I protest, "as your father is very hard man and will take violent proceedings, viz., to kick me out of Park Street establishment for passage ticket and banking business."

"Not so," Miss Rosa Lo Iacono replies. "You will see that my father is not hard man like you say."

Nevertheless, the next day Mr. Lo Iacono uplives to his reputation, and uses language calculated to provoke violence in person of his own social standing. Me, I am quite calm, however, and I dust off my trousers, the knees of which are torn, and recover my hat which Mr. Lo Iacono throws after me, although not quick enough to prevent same being demolished by passing truck.

"Very well, Mr. Lo Iacono," I say. "You shall see who will prevail here eventually."

Then I go home to staunch hemorrhage of the nose, which I sustain at the hands of Mr. Lo Iacono, and also to make myself presentable that I may obtain new situation as second-to-none bookkeeper. As I disappear around the corner of Park and Mulberry Street, Mr. Lo Iacono is for brandishing his fist at me, and in threatening language forbids me to see or to address Miss Rosa Lo Iacono again, at which I laugh. It is impossible that a gross, brutal ignoramus such as Mr. Lo Iacono shall prevent communication between us on account I am resourceful and shall contrive plenty of meetings.

This I am unable to do, for the next day Mr. Lo Iacono sends Miss Rosa Lo Iacono to visit relatives at Fort Lee, N. J., and despite that I am sending letters to her to the 116th Street address with please forward on the envelope, I hear nothing further. Six, seven, eight weeks go by, and I am disconsolate. All this time I am to find myself impossible to eat, to sleep, or to take interest in anything except that I am working hard in my new capacity of assistant shipping clerk in wine, spirits and Italian produce establishment of Ferneti, Podeste & Co., 782 West Broadway.

Also I am endeavoring to find relief by attending the performances of the Rosenberg Grand Opera Company at theatre on Fourteenth Street. However, I am not obtaining much consolation from this, as to a person of my tight-strung temperature, music has the effect to plunge me only into greater melan-

choly, so that I leave these performances all broke-up and in despair.

At last I am unable to stand myself any longer in the sad circumstances and so I am resolve on suicide to end up my troubles. But it shall be suicide of such original and of such power, as will have effect to cause Miss Rosa Lo Iacono to sit erect and to take notice, as the vernacular has it; for now I know the worst. Miss Rosa Lo Iacono is engaged to be married to her cousin, Francesco Buoncore, who conducts plastering and contracting business in Paterson, N. J., and me she has forgotten to the limit.

To this end, therefore, I strike upon the following plan: On Wednesday following is performance of La Boheme by G. Puccini, with the score of which I am familiar like I know my own name. In the first act the poet Rodolfo, the artist Marcello, the musician Schaunard and the philosopher Colline are rejoicing in their garret that it is Christmas Eve, and they make resolve to go out and dine with hilarity on account of holiday season, when the landlord comes to demand rent. Up to this point the music had been gay to wildness, and when the landlord's knock sounds itself on the door, there is a sudden consternation. The music ceases. The four Bohemians tip-toe about the stage. All is still, and the audience sits breathless. What next? Yes! What next?

Here, I am to rise from my seat in the front row of the gallery and leap over the rail, to go crashing to the floor of the parquet below. Ahi-me! So young! So handsome! It is a sad end. Every bone in my body is broken, and yet, by some strange chance, my face is uninjured. It is pale, delicate, tender, beneath the lightly curling dark hair, for I intend that I shall have clean shave and shampoo before entering the theatre.

A day in advance I shall notify Mr. Lo Iacono and Miss Rosa Lo Iacono, of my intention, so that if they desire to prevent, they may do so.

"Pooh!" they will say. "It is only a hoax. He is too cowardly to do such a thing."

But they shall see. My mind is fully made up, and exactly according to my programme, I arrange everything. I write letters to Mr. Lo Iacono and Miss Rosa Lo Iacono one day in advance. In the letter to Miss Lo Iacono, I am at pains to explain that I shall jump over the gallery rail when Benoit the landlord knocks at the garret door during the first act. "Crushed and bleeding you will behold me lying lifeless at your feet," I write her. "Thus you will see your handiwork, perfidious girl, and let your affianced husband accompany you that he too may know what I have suffered for your sake."

I seal the envelopes and send them by registered mail to the 116th Street address on Tuesday evening. On Wednesday morning I send my clothes to be pressed, and that afternoon I notify Mr. Tagliabue, manager for Ferneti, Podeste & Co., that I may be a little late at the office next morning. A little late! Heaven pity me!

Finally it is a quarter to eight on the fateful evening, and I am sitting in the middle seat of the front row in the gallery of the theatre on Fourteenth Street. How the minutes creep! It seems an eternity until quarter past eight. At length the conductor rises his baton. Allegro vivace is the temp indicated on the score, and my heart beats in similar time. The few introductory measures pass quickly, Marcello at his easel in the garret curses the picture he is attempting to paint. It is a representation of the Passage of the Red Sea, and he complains that it is too chill and damp, on account it makes him feel too much the cold atmosphere of his garret studio. As for me,

my hands are like ice, but I am quite calm in my resolve. Then follows a dialogue between Rodolfo and Marcello at the end of which Colline enters. How ravishing the music! Rodolfo is burning the manuscript of his play, act by act, to warm the hand of himself and his two comrades. What generosity! What poetic tenderness to his friends. Me, I am just like that. All that I possess I would give to a friend.

Five minutes later, Schaunard enters. He brings food, wine, money which he has earned by—no matter. He has earned it, and now he hastens to share it with his boon companions. Glorious fellows! They outvie each other in the warmth of their feelings. It finds ready response in my bosom, and I rejoice with them, forgetting myself. Now they dance; now they sing; and then—oh, brutal, hard-fisted scoun-

And I, too, I once felt that I was a poet, and Miss Rosa Lo Iacono the Muse Incarnate, but now it is different. I dash away a tear, but the music uplifts me again. What are my feelings in the presence of art like this? See how the little children dance around the toy vender Parpignol, who has just entered. The mothers, they come in and whip them away, and Parpignol leaves still singing his wares:

Ecco i giocattoli di Parpignol!

Fool that I am! I should have jumped just before Parpignol came on, and now he has gone off and I forgot to jump!

Ah, well! In the third act, Mimi sings softly, slowly: "Addio, senza, rancor." "Farewell, with no hard feelings," she says, and here it is that I shall jump. But I am in the grasp of fate, for when the third act curtain falls on Mimi and

Rodolfo pledging a new meeting some time next Spring, I am still sitting in my seat.

However, there is a place in the last act where Schaunard is about to pawn his overcoat to buy medicine for the dying Mimi.

Ti dico addio

Fidele amico mio.

These are the words he sings: "Goodbye. Oh, faithful friend!" And then it shall be indeed goodbye to me.

Now my doom is hurrying to me. I have but a few minutes of life, and so let me surrender myself to the magic of the music. Assuredly it is a fit requiem for me, these sad, heart-rending melodies of the last act. Rodolfo and Mimi are reunited only to be sundered immediately by death, which comes to Mimi in a most affecting manner. She expires from pulmonary tuberculosis, with minor triads thrice repeated on muted wind instruments. It is very pathetic, and everybody is weeping as the curtain falls. As for me I sit in my seat long after most of the audience are for going out, since I am still under the spell of the music.

At last some one claps me on the shoulder. I turn to see in the row of seats behind me, Mr. Lo Iacono, Miss Rosa Lo Iacono, and Francesco Buoncore, her affianced husband.

"Poltrone!" Mr. Lo Iacono cries. "Coward! Thief! You rob us of a dollar and a half. Here we sit through that entire caterwauling, waiting for you to jump and you did not jump!"

What could one say to such heartlessness? Nero was a benefactor compared to this.

"Pigs!" I say. "Shall I die for such as you? On the contrary, I am determined I shall live on in spite of you. For me love is now of no consequence. No longer do I possess love. Now I possess only art!"

"Art nothing!" he exclaimed. "You got cold feet."

AS OWNER of a Buick Model E-49-1918, Seven Passenger Car," writes Mr. James E. Doole, of Lowell, Massachusetts, "number me among the many loyal and ardent rooters for the popular Buick Cars.

"In excellence, for all around service, it proved more than satisfactory, far exceeding my expectations, especially so in the matter of minimized repair and running expenses; a repair expense comparatively nil.

"A motor flexibility allowing a wide range of control quickly adaptable to any condition of road, level or grade.

"Throttles to very low speed on uneven country roads, topping a 7% 200 foot grade all in high gear at slow speed and without perceptible effort, with low gas consumption and also enjoying the contributing pleasure of finishing without a tube leak or blowout in 7,000 miles traveled—naturally finds me with a goodly share of praise and commendation for the Buick cars."



"Pigs," I say. "Shall I die for such as you?"

drel! the landlord comes in. He demands the money. They put him off, and so the act goes on to the entrance of Mimi and her tender beautiful scene with Rodolfo.

Surely there never before was music written like this! Rodolfo and Mimi search for her missing key. Their hands meet in the darkness and clasp. It is again a typical case of love at first hand. It is just like myself when I—Sacristi! I forgot to jump over the balcony railing when the landlord came in!

Never mind. In the second act, at the conclusion of a splendid quartet in front of the Caffè Momus, the toy vender Parpignol is heard in the distance. Again there is a moment of quietness—an intense period of waiting for the audience. Here I shall take my jump instead.

Through the entr'acte I sit like in dreaming, and then the curtain goes up to reveal the exterior of the Caffè Momus. More gaiety, and then Rodolfo enters and Mimi clings to his arm. With what grace he introduces her to the assembled company, and how exquisite the melody that conveys his words:

Questa e Mimi, gaia fiornia,
Il suo venir completa
La Bella campagna,
Perche son io il poeta
Essa la poesia.

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

THE recent announcement of sweeping reductions in the prices of Buick repair parts has caused considerable comment. But the announcement takes on its fullest significance only when considered in connection with the entire situation, of which the reduction in the prices of parts forms simply a part.

The expansion in all parts of the Buick factory during the past two years was part of a plan that had been carefully worked out in advance, and the results of this preliminary work are now being felt by the vast multitude of Buick owners.

For expansion in a factory can have but two meanings. It may mean that, in view of the increased production facilities, a product of the same quality can be built for less money, or that a better product can be built for the same money.

In the case of the repair parts, their quality was already established. They had been designed for each particular model of Buick cars at the time those cars were put on the market, so that improved and increased facilities for their production resulted in the lowering of their manufacturing cost. And this saving is reflected now in the retail prices for these parts, ranging as they do from 15 to 35 per cent lower than formerly.

BUT the increase in the factory itself was for a different reason. For many years the Buick car has dominated in its particular field. It is the ambition of the Buick Motor Company to see that it continues to do so.

Much time and thought have been expended on analyzing the situation, to make sure just what factors had contributed to this result in the past, in order that a safe guide for the future might be established.

Each season it has been the policy to increase the serviceability of Buick cars—in other words, to build them better than they had ever been built before. Consequently, the cars have improved in value each year, from the owner's standpoint, and to this improvement may be attributed the rapid, steady growth in Buick business.

So in planning for a still larger and better equipped Buick factory, the main idea in view was the continuance of the policy that had been so successful in the past.

This is not so easy as it sounds. During the first few years of Buick history the Buick car was capable of rapid improvement, as the succeeding Buick models proved.

But now, after a score of years spent in the development of a single principle of motor design, together with the other essential units of the car, a point has been reached where development in design comes slowly as compared with the past.

Tampering with design, simply for the sake of having something new to offer, is not to be thought of. There is no progress in changes of that sort. But there is progress of the finest kind in changing any part to improve its serviceability, whether the change is in the nature of design, manufacture or material.

IT is along the two latter lines that the most progress has been made in the past few years, and this is because of the factory additions and lowered manufacturing costs mentioned above.

During the great war, Buick production was largely along lines other than the manufacture of passenger cars, and for nearly two years the market was supplied only by such cars as it was possible to build and still keep up the production of war materials.

But we knew that it was only a question of a comparatively short time when the Buick energies could again be concentrated entirely on building cars, to supply the demand that had been accumulating all during the period of curtailed production.

So plans were laid for a bigger factory—for bigger buildings, of improved type, equipped with the latest type of machinery—and for a vastly enlarged production, to be begun as soon as conditions made it possible.

Some of these new buildings were necessary in order to take care of the increasing volume of war orders, and they were constructed with all speed. Other work that could not be finished immediately was so completely laid out that it was done in a surprisingly short time after the signing of the armistice.

AND the beginning of the 1920 season found a vastly bigger Buick factory in full operation—bigger in floor space, in production capacity, more efficiently equipped and capable of building a number of cars that would put the biggest previous Buick year far in the shade.

The Buick Motor Company is not attempting to catch up with its production by trying to crowd the same old plant and the same old organization to still greater efforts. Its policy is more constructive and one that is certain in its beneficial effect on the product.

The purchaser of a Buick car will find its effects in the car itself, because the present Buick models are the highest in quality of any cars that have ever borne the Buick nameplate.

This is what Buick purchasers have been led to expect by the Buick policy in the past, and the result has been achieved without the necessity for increasing the price.

Value is a comparative thing and the value in a car is judged by two main factors—the things that can be seen and appraised by inspection, and the things that can be appreciated only after continued use over a fairly long period of time.

The new Buick car is open to both methods. At every point may be seen the added value in comfort, convenience, equipment, etc. In these features alone, the added value over previous models can be plainly seen.

The mechanical improvements are numerous and are of such a thoroughly practical nature that they will be more evident to the purchaser at the end of the year than they are at present. He may get some inkling of them from improved performance, but their real worth is best expressed in terms of service and mileage.

BRIEFLY, these are the two phases of the Buick situation today, first brought to public notice by the announcement of reduction in prices of Buick repair parts at a time when reductions in prices are almost unheard of in connection with any manufactured product.

As a matter of fact, the added value in the new Buick models really constitutes a reduction in prices, but in a form that we are sure will be more acceptable to Buick purchasers than the actual cash could have been. So much care and thought have been expended on the development of the new and better features now offered to Buick purchasers that no owner would care to dispense with them, once he appreciates their full value, nor to own a car without them and be deprived of the added utility they provide.

Buick Expansion Provides New Home for Tool Plant

ONE of the vital factors in raising Buick cars to their present high standard of mechanical perfection is the plant manufacturing tools, jigs, dies and fixtures for the production of Buick automobiles. Often barely considered in the description of fine car manufacture, this tool factory contributes largely to the excellence of the Buick.

The tool plant is complete in itself; yet it is but a unit in the greater Buick organization. Until recently included in the motor factory, the tool plant now occupies a two-story building in the heart of the Buick manufacturing expanse.

The building was originally constructed for the production of eight-cylinder Liberty motors. Buick mechanics, thoroughly versed in the Valve-in-Head principles, had made such great strides in building twelve-cylinder Liberty motors, that in anticipation of the work to be done on the Liberty eight, a special reinforced concrete plant was erected near the large motor factory. But just as the building was completed and the work on the Liberty eight started, the war had been won.

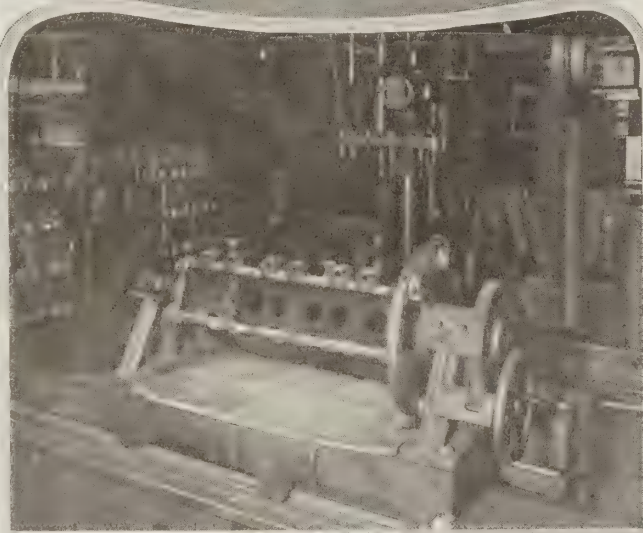
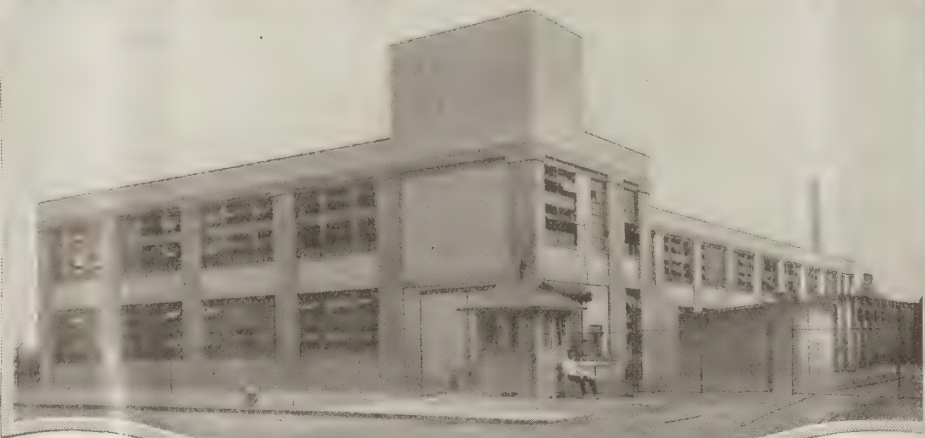
And on the eve of increased Buick production, the tool department moved into the new building, where, greatly expanded, it is now insuring perfect precision and absolute accuracy in the manufacture of Buick parts.

One cannot point to any particular part in a new Buick as a product of the tool department. Yet, the efficient construction of every part in the car from the pistons to the brake rods can be traced directly to this important department.

The Buick, because of large production and the essential need for interchangeability of parts, is virtually a machine-made car. Except for the operation of machines, very little work is left to the hands. And it is the task of the tool plant to keep these automatic and semi-automatic machines equipped with the proper tools, dies and fixtures at all times.

As a result, the work of the tool makers continues steadily throughout the year. Even before the production of a new model starts, there is scarcely any increased activity in the tool department, so few are the radical changes in Buick construction.

The only sweeping changes made in the Buick plant come when an improved method of



Above: The New Home of the Buick Tool Plant in the heart of the Buick factory

Below: One of the fixtures that holds cylinder castings for drilling

manufacture has been worked out. Then the tool makers, following the blue prints of the tool designers, prepare the new tools, dies, jigs or fixtures. That is why the Buick Motor Company is building better motor cars.

So the new Buick tool department is constantly busy in replacing worn equipment and making tools of new design. The plant is laid out along the general lines of all Buick factories—the raw material comes in one end and the finished tool leaves at the other. Waste motion is avoided at every turn. For it is just as important to reduce handling and spoilage of material in the tool department as in the plants on production.

In the new building are the various departments comprising the complete tool plant. On the lower floor are the departments for machining jigs and fixtures, milling of heavy tools, assembly and vise work, electric welding and heat treating. The second floor holds the

lathes, semi-automatic screw machines, gauge and milling machines and the grinders.

Each assembly of machines has its particular purpose. In the department for machining jigs and fixtures, numerous devices are made to hold parts for drilling a number of holes in one or several operations. For instance, there is the water pump body fixture, which permits the drilling and punching of eight holes in two operations. And not only does

this fixture save time and prevent spoilage, but it insures a certain accuracy beyond the limitations of hand labor.

Perhaps a better illustration of the use of a jig or fixture is afforded in the cylinder casting fixture. This device mounted on a small car holds a single casting and as it passes from machine to machine the various holes are drilled and punched. Of course, a score of these fixtures are in use at the same time. What would ordinarily be a half-day's job is reduced to a series of operations taking less than two minutes.

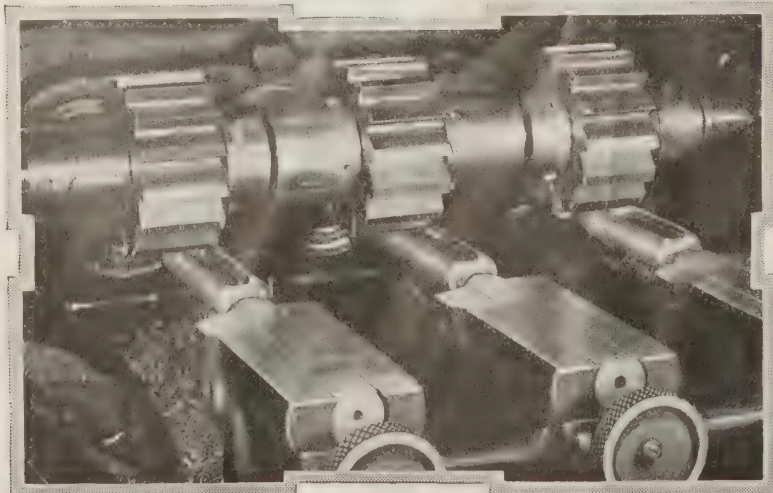
Another example of the economy practiced at the Buick factories is shown in the preparation of small tools, such as drills, reamers, punches, cutters and the like. Formerly each of these devices was made entirely of high speed tool steel, which cuts down ordinary steel as readily as a carpenter's plane takes long shavings off soft pine.

But this metal has become exceedingly expensive. Now only the cutting or boring end of the tool is made of this high speed steel. The shank of the tool is made of less costly carbon steel.

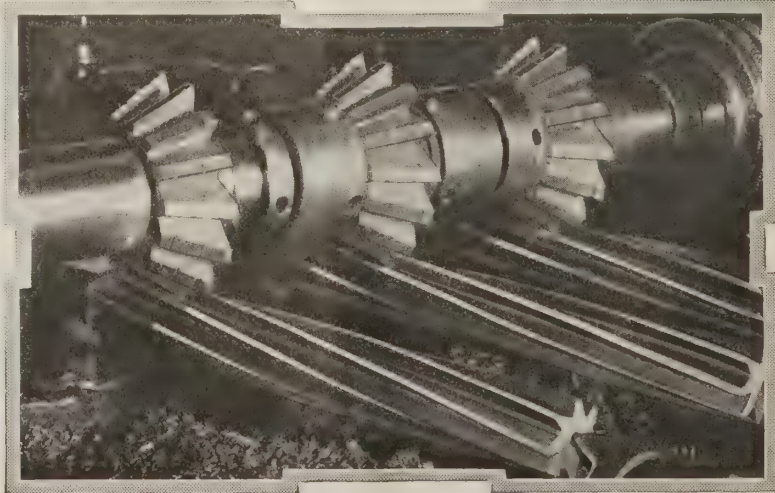
Bars of the two metals are firmly united in a powerful electric welding machine. The two separate pieces of metal are made one in less than twenty seconds. The finished bar not only saves considerable high speed tool steel, but by using the carbon steel for the shank provides a tool more easily fitted in the machine.

On the milling machines, metal bars, plates and strips of all sizes and shapes are dressed down by the milling cutters and saws. Perhaps, a new part is wanted for some piece of machinery or a guide for a jig is needed—the milling machines accurately shape the part to the specifications of the most detailed blueprint drawings.

Then the piece is sent to the finishing department where it is ground and polished down to



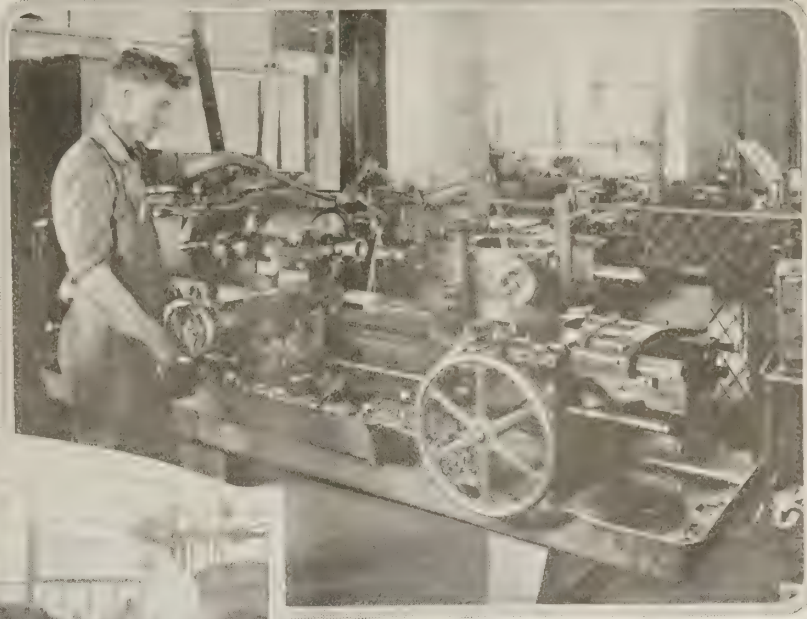
High speed saw cutters milling out small cutters



Milling out small spiral drills for Buick machines



The furnace department with the special pre-heating furnace in the foreground



One of the semi-automatic screw machines capable of several operations at one time

measurements as precise as fine micro-meters can determine.

In the heat treating department a number of small gas furnaces are operated to harden the metals used in the manufacture of the tools. The furnaces may be operated separately and at different temperatures for pre-heating and heating. A metal to be heated to 2100 degrees first undergoes treatment at 1400 degrees to eliminate any danger of brittleness.

Another ingenious device is the semi-automatic screw machine on the second floor of the Buick tool plant. This machine has capabilities almost unlimited in the manufacture of tools. It can carry on two operations at the same time—drilling out the interior of a metal bar as well as cutting down the exterior.

The significant fact behind the semi-automatic screw machine is that it is as automatic as machines of this type have ever been designed and is yet not automatic enough to operate without the direction of a trained machinist. It is an illustration of the combining of man's skill with mechanical devices in the production of tools which neither man nor machine alone could equal in point of accuracy, saving of time and material.

In the Buick lathe department a great variety of the smaller tools are finished. One series of lathes may be working on broaches, drills or cutters; another may be milling or indenting the surface of gauge handles. There is always a steady demand for these tools in the Buick factories to replace those that have become worn or damaged in use. The main object of the entire plant is to maintain tools in



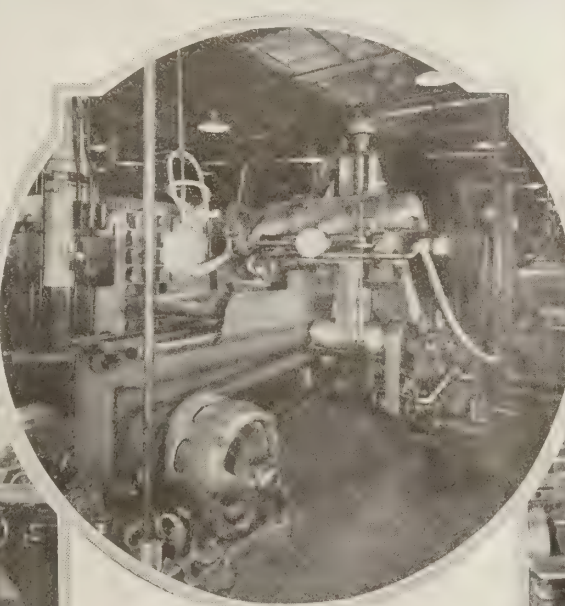
The powerful electric welder which unites bars of costly tool steel and carbon steel

the best working condition. Every care is taken to avoid the delays and mistakes that might result from inefficient tools.

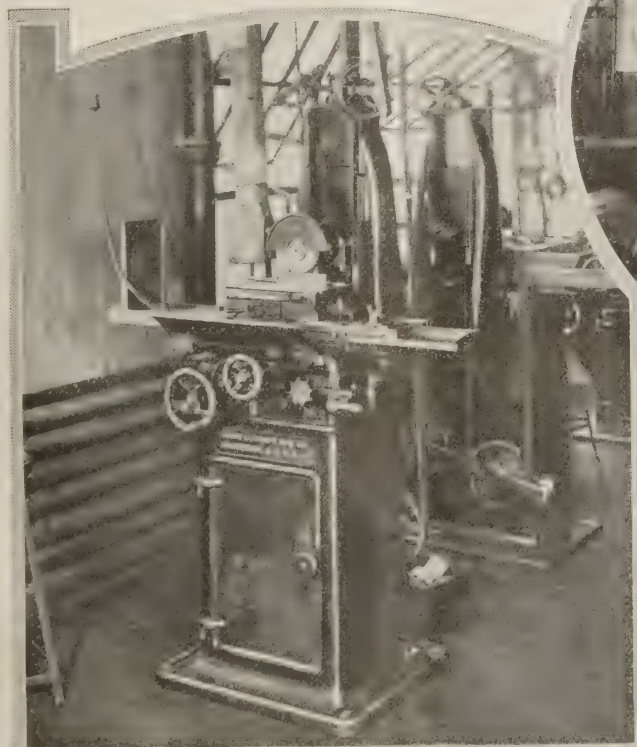
This is particularly true in the case of gauges. For instance, the gauges used to determine the correctness of holes are shaped like a dumb bell with cylindrical heads. One of these heads will be the precise size. The other will be too large.

And the difference in diameter of these two gauge plugs is less than the thickness of a cigarette paper. When this difference in size changes to the least appreciable measurement, the gauge is immediately discarded.

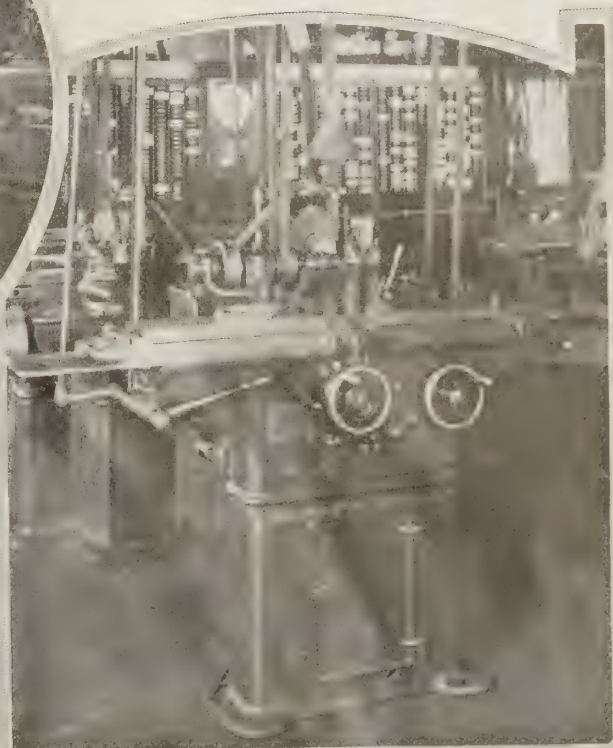
The new gauges and other small tools are completed in the grinding machines with carborundum or emery wheels varying from one-half an inch to six inches in diameter.



Large flat surfaces of metal are dressed down on machines of this type



The smaller and more delicate pieces are ground down on grinders with magnetized bases for holding the metal



The first polishing or dressing down is usually carried out on machines of this type before going to the small grinders

which are constantly busy at this work.

When a flat surface is ground down, the piece is held in place by a magnet and the grinding wheel passes lightly over the top. So little surface is removed at times it seems as though the grinding wheel barely touched the metal. And at other times great showers of sparks fly from the polished surface and wheel.

And so the Buick tool plant, even in its new building, is always working at top speed in an effort to maintain its side of the greater Buick production. No better illustrations of the department's ability as a whole can be expressed than by the many refinements and improvements the Buick Motor Company has been permitted to build into its new models.

The real meaning of such a department, as an adjunct to the progressive system of building motor cars by the aid of automatic and semi-automatic machinery, is best illustrated by a comparison with the European method of building cars practically by hand.

It is true that some wonderfully fine pieces of mechanism are produced by the older method. But in spite of the fact that skilled labor is vastly less expensive in foreign countries than in America, the cost of a foreign car that can be justly compared with the Buick is several times that of the Buick car.

Aside from the big question of first cost is the scarcely less important one of maintenance cost. And it is literally true that under the hand method of building, interchangeability of parts is unknown, so that repair parts must in nearly all cases be largely or wholly built to order.

The Buick Seven-P



WHERE the going is hardest, the big seven-passenger Buick is seen at its best. It asks no odds of country roads, of steep, hard grades or heavy sand. It is a fact that many thousands of motorists whose driving frequently, or even occasionally, leads them over unimproved highways and difficult, hilly country, deliberately choose this particular car because of its

Passenger Touring Car



unusual road qualities. Many cars are able to carry their passengers, somehow, through comparatively difficult going. Few cars can do it with comfort and satisfaction. The model K-Six-49 is one of these few. And it is beautifully modeled and finished—as strictly high-grade in appearance and style as it is in power and roadability.

BUICK CARS DOMINATE



Under the able management of H. P. Sturm, the Clarksburg Automobile Company, of Clarksburg, W. Va., has become the leading motor car service and sales point in that territory, handling Buick cars. Mr. Sturm is an automotive engineer and in addition is a business man of high calibre. The combination has resulted in perfect supervision and direction of all departments. The character of the place is reflected in this picture of the show room.



"Dependability stands first in a motor car for a doctor," says Dr. F. R. Underwood, of Seattle. "This is my second Buick and it has already traveled over 20,000 miles without any serious repair work. I couldn't cover my practice without it and I certainly think that the Buick Six is the dependable car for men and women in my profession." Dr. Underwood was among the first of Seattle physicians to own a Buick and is therefore well qualified to speak authoritatively on the subject of Buicks for physicians.



The story of the Niles Buick Company, Niles, Ohio, is one of hundreds that could be told of dealers in the Buick organization. Three years ago, the owner, Mr. John J. Hake, started business in a livery stable in Girard, Ohio, with a box stall for a repair shop. Today he is the sole owner of the above complete establishment, equipped with up-to-date facilities for both service and sales. "We feel that we and our building are a Buick product just as much as the cars that are made in Flint," is Mr. Hake's comment.



Mr. Pratt E. Tracey, President of the Toledo Screw Products Company, Toledo, Ohio, writes: "The above line of Buicks shows that we believe in the car, as all members of our organization use Buicks and are Buick enthusiasts. Our experience has shown that the Buick is a dependable, practical car, and we are thoroughly convinced that it is the best moderate priced car made. The simplicity of operation and low upkeep cost, coupled with the excellent service given by the Davis Motor Sales Company, make boosters of every member of our organization. We have found the Buick Light Truck a dependable factory car. It has been in constant use for over one year and the upkeep cost has been practically nothing."

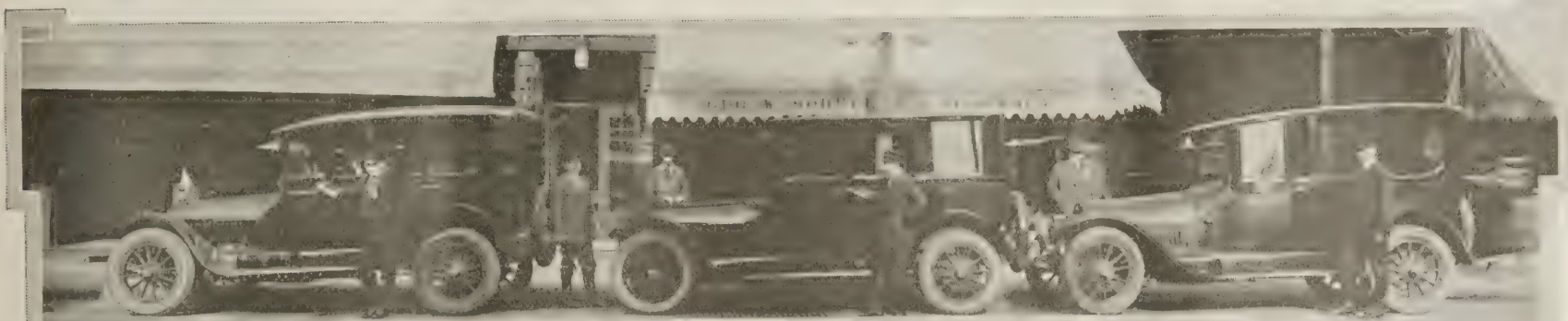


Doctors William J. Gillette, E. B. Gillette and N. W. Gillette, who own and conduct the Robinwood Hospital at Toledo, Ohio, send the above photograph, showing their three Buick cars. "After several years of experience with Buick cars," they write, "we adhere to them more strongly than ever and find them equally satisfactory for business or pleasure. The five-passenger car in the picture has made an extremely satisfactory trip from Toledo to New England and back through the Berkshires and Alleghenies. The prospects are that each Buick we now have will in the future some time be replaced by a later model."



This is Mrs. James Sobey, wife of one of Seattle's prominent lumbermen, and her Buick Roadster. After driving it a year and a half she startled her husband by asking him what was under the hood. "All I ever did was to fill the radiator and watch the gas supply," she said. Which explains her preference for her Roadster over her husband's larger and more costly car.

IN EVERY MOTOR FIELD



"I have one of the best taxi lines in the middle west—Buick cars only," says Mr. Tomberger, of the Moline Taxicab Co., Moline, Ill. The car at the left is a Model E-Six-49 that has run 30,000 miles and is now running on the third set of tires. The general condition of the car is still first-class and the engine has as much power as ever—no new pistons or rings have been

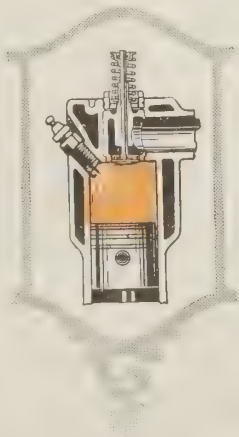
fitted. The Model H-Six-50 in the center has only been driven 7000 miles, but is giving excellent satisfaction. At the right is a Model C-55 that was used three years in a private family, during which time several long trips were made, one from Moline to Maine and back. It still makes the Sixteenth Street hill on high—the favorite test in Moline.



Mr. J. W. Edwards, better known as "Dad" to folks in Seattle, threads the highways of Washington in his 1916 model Buick car. "No sense in burning up the roads," says Mr. Edwards. "Twenty miles an hour is just right." Mr. Edwards is one of Seattle's pioneers and is 83 years of age. His life has been and still is an active one. He is the father of the well-known Peterborough canoe, a successful lumber and mining operator, an ardent golfer, motorist, trap shooter and hunter.



Second Street in Clearfield, Pennsylvania, has become well known as "Buick Avenue," for nearly every resident between Pine and Reed streets is the proud owner of a Buick Motor Car. Within one block the photograph tells its own story. This is an everyday sight and one proud driver could not resist snapping the camera. There are eight Buicks visible, owned by Messrs. Leslie Wallace, E-45; Earl Smith, H-45; A. L. Moore, H-45; Doctor Rawels, H-44; Doctor Bigler, H-49; Doctor Pieper, H-45; Doctor Frant, H-45; Doctor Wilson, E-45 and Sheriff Goman, E-45.



The man at the wheel of this Buick car is a Burman and the passenger at the rear is a Buddhist priest. The car is standing at the foot of the stairway to the famous Shwedagon pagoda—a structure which is the finest of its kind in the world and might safely be termed the headquarters of the Buddhist religion as far as Burma and India are concerned. This photograph was submitted by Messrs. Rowe and Company, Buick dealers at Rangoon, India.

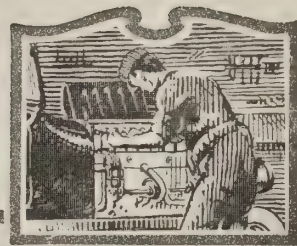


Mr. W. S. Mercer, Princeton, Illinois, and his Model E-Six-50 Buick. Mr. Mercer says, "I drove a Model F for eleven years, but decided it was futile to try to wear it out, so I purchased the Model 50, in which I take great pride."



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Emergency Timing of a Buick Motor

WHILE this must by no means be considered directions for absolutely correct timing of a Buick motor, it is a very simple method of adjustment easily memorized and may prove beneficial in an emergency. Should the distributor head or contact brush become loose and slip out of position, thereby throwing the motor out of time when you are not near a service station.

First: Be certain the spark control lever is fully retarded to the uppermost position on the steering wheel quadrant. Remove spark plug from No. 1 cylinder (the one nearest the radiator). With the starting crank, turn the motor over to the right or in clock-wise direction until the piston in No. 1 has traveled to the top of the cylinder. This position may be readily ascertained by placing a screw-driver through the spark plug opening, allowing it to rest directly on top of the head of the piston and by holding the screw-driver in your hand, while the motor is turning over, you can detect when the piston stops or reaches its extreme highest position on what is known as the compression stroke, at which point you will notice the starter crank can be moved a trifle without causing any further action on the travel of the piston. When the piston is in this position on the compression stroke, both valves will be closed with no pressure on the push rods.

With the motor as above, remove the distributor head which carries the high tension wires running to each of the spark plugs. This can be easily accomplished by pressing out the

flat spring on the side of the distributor head and turning the head backward until the slot in head lines up with the locking spring when the entire head or cap to which is attached all spark plug wires may be lifted off. Inside will be found the brush or rotar arm that is set upon a vertical shaft which is a part of the lower portion of the distributing head.

You will notice exactly in the center of the rotar arm a recess containing a set screw. With a screw driver, turn this set screw to the left until the rotar arm is loose when it may be easily turned to any position. Then place the distributor head (which carries the plug wires) back into position on the lower part, for the purpose of determining where the contact on the under side of the cover known as wire No. 1 (which you will find marked in raised letters on the head or cap) is located. After you have determined this point, lift the head off again and turn your rotar brush or distributing arm to that point. Then set the set-screw in the rotar arm by turning to the right making sure it is tight. Place the distributor head back in position and turn until the spring locks in place. Then lay the spark plug on the outside of the cylinder being certain that the outer shell of the plug or that containing the threads, is in contact with some part of the motor. Turn on the switch and by moving the spark control lever backward and forward on the quadrant, you will locate the point at which the spark is obtained, which will show whether or not you have your brush or rotar arm set early or late. If you obtain a spark anywhere from fully retarded position to one-half downward travel

of the spark control lever, you will have sufficient range to secure very satisfactory results from your motor. If, however, you find it necessary to pull the control lever clear down, before securing a spark on No. 1 spark plug as above designated, the timing is too late and if so, you should again remove the distributor head (containing the wires) loosen the screw in the distributor arm or rotar brush and move it slightly in the opposite direction to that in which the arm moves when pulling the spark lever down from the top.

If the contact brush or rotar arm is directly beneath the contact in the distributor head where No. 1 wire is connected, you will have a spark on No. 1 spark plug. When you have a spark at this point, you may rest assured the balance of the cylinders must be firing in their proper order.

After you have adjusted the timing as above, replace the spark plug and start the motor in the usual way.

The flywheels on all Buick motors are correctly marked to enable the experienced mechanic to determine the position required for timing the motor exactly and as it is utterly impossible to get the maximum power and satisfactory performance if the motor is not timed correctly, it is always best to take the car to a Buick service station as soon as possible to have the motor timed, should the necessity arise. All motors are properly timed when they leave the Buick factory and the timing should not be tampered with unless for some reason the timing has been disturbed.

Owners Give Their Opinions of Buick Cars

Climbs Mountain Trails

A BUICK beats a burro in reaching out-of-the-way places in the mountains where the trout thrive," says Mr. C. A. Miller, of Canon City, Colo. Mr. Miller's first Buick was a Model D-45, which, after covering 13,000 miles on the first set of tires, he sold to another Buick enthusiast, who made 3,000 miles more on the same tires.

"I have driven my Model E-45 over 5,000 miles and have had several good offers for it. But it is so free from faults that I have not yet decided to sell it.

"The greater part of my travels are over Rocky Mountain roads with plenty of rocks, crooks and turns. Last summer on one trip I made 200 miles in nine hours over mountain roads with hundreds of turns and steep grades. We reached our destination in time to unpack, cook supper, and rig up our fishing tackle so that we caught seventeen fine mountain trout before dark.

"The round trip consisted of covering 700 miles without any trouble. After returning home, one of the party inserted an item in the home paper to the effect that my car can go where a burro could not go.

"For reliance, sturdiness, faultlessness, economy, power and long life, the Buick beats them all. And I find the Buick sells for more second-hand than any other automobile."

He Has the Facts

AFTER trying seven different makes of automobiles, Mr. J. D. Furtick, of Rienzi, Miss., has found that the Buick will do what other cars fail to accomplish.

"Let me tell Buick Bulletin readers that I have owned seven different automobiles in the last seven years and my last car, a Buick 6-D-45 will do the things other cars fail to accomplish. The gasoline mileage obtained is very satisfactory.

"I believe when I get in a car I can tell in a little while the kind of a car it is. 'You have it right when you say, 'When better automobiles are built, Buick will build them.' So if at any time you have anyone in doubt about the merits of the Buick, send him to me. I have some facts about it."

*When Better
Automobiles Are Built
Buick
Will Build Them*

Will Not Part With It

W. H. FALKER, M. D., of Chicago, in a letter to the South Side Buick Sales Co., writes: wonder if you would be interested in knowing what a wonderful car my Model 54 Buick has turned out to be. I have driven this car to date about 54,000 miles with a repair bill of less than \$10.00. My tires on this car average me from seven to ten thousand miles per tire.

"I am quite sure that I would find it practically impossible to carry on my practice without this car, or some similar car that would be just as reliable, and as I am not so sure that I

will ever be able to find another one to fill the bill in such a high class manner I have made up my mind to drive this car out, whether it takes 100,000 or 300,000 miles to do it.

"While I am at it I want to thank you for the very efficient and courteous service I have received from your company for the three years I have been driving my old 54."

Climbs Summit Avenue Hill

I NOW have my third Buick, a Model E-Six-49," writes Mr. John J. Gillett, of Boston, Mass. "Yesterday morning I filled my gasoline tank and left for Worcester, Mass. In passing out Beacon street, Brookline, I turned up Summit avenue at a speed of 27 miles per hour and went over the top without changing out of high gear, going the last 500 feet at a speed of about 10 miles per hour. For anyone to appreciate what a car has to accomplish to climb Summit avenue on high gear, they would have to go out and try it, for the street is very rough and lots of holes, causing the car to lose traction.

"I got my Buick on June 29, 1918, and had the first flat tire at the end of 8,439 miles. The two front tires have yet to show the first sign of fabric. My speedometer registers 9,350 miles."

Advices Buicks for Farmers

MR. C. N. SHUMAKER, of Galion, O., an ardent reader of the Bulletin and a lover of Buicks, believes that every farmer should have a Buick.

"I drove my Buick home from Flint in 1917, and I want to tell you she is the car for power and speed. I think every farmer ought to have a Buick. I couldn't get along without mine."

The Flint Centennial Celebration



THE recent Centennial celebration held in Flint was a notable event in the history of the city, be-

cause it combined three causes for jubilation. In the first place, a large part of the flower of Flint's young manhood had returned triumphant from trench and training camp. Second, Flint had completed its hundredth year as a Michigan city. Third, prosperity unparalleled in Flint prevailed, with the promise of a still brighter future for Flint among the industrial centers of America.

The populace entered with spirit into the celebration, and throughout the week a number of events were held in which the whole city took part. Among these was a big parade through the gaily decorated business streets. The Buick Motor Company entered the float pictured above and was voted first prize by the committee of awards.

Capturing this prize was particularly gratifying to the officials, because the history of Buick during the past twenty years has been so closely interwoven with that of the city itself.

At the time when the Buick Motor Company erected its first small factory and commenced the development of the Valve-in-Head principle of design, Flint was a city of about 18,000 inhabitants. It bore the title of the "Vehicle City," because of its previous activity in the production of carriages, wagons and the like. But in spite of that fact, the increase in the population and wealth of Flint had been almost nominal for a considerable period of years.

But now, in 1919, Flint is a Vehicle City of another description, and it seems to pulse with the greater energy and progressiveness that typify the more modern vehicle.

There are in Flint today about 100,000 people, nearly all of whom are directly or indirectly dependent upon the one dominant industry around which the newer Flint has developed.

And so it is with the Buick factory. Of the little building that constituted the entire plant and offices of the Buick Motor Company about twenty years ago, nothing familiar remains except the legend over the door, "Buick Valve-in-Head Motor Cars." In its place is a factory that stretches for considerably more than a mile along the railroad tracks at the northeastern part of Flint, ceaselessly employed in building the hundreds of thousands of cars now required to fill the world-wide demand.

This photograph shows the prize-winning float in the Flint Centennial Parade, with which the Flint of today commemorated the Flint of one hundred years ago, as well as the progress that has been made since the founding of the city. Combined with the Centennial were suitable events in honor of Flint's Returned Great War Veterans

It is significant that the fundamental principle of design has remained unchanged in the Buick motor after all these years. Each season since motor cars were first introduced has found some new type of motor or motors placed before the public, with different arrangements of cylinders, valves or other working parts.

Not that the Buick motor today is the same as the original Buick motor. It is the development of that original motor into a refined and powerful mechanism—as different as a perfect rose from the wild flower from which it was developed.

But the fundamental principle is the same. That was the big working basis that made the development possible.

In discussing internal combustion motors, it is first necessary to get one fact firmly fixed in mind, namely—that they are all heat engines. In other words, they derive their power by converting the fuel used in operating them into heat, and it is the expansion of the heated gases resulting from each explosion in the cylinders that supplies the impulses necessary to run the motors.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be.

In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water jacketed space there is in a motor, the greater the thermal (heat) efficiency will be, because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits

of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases, both inlet and exhaust valves form a part of the combustion chamber, where the heat is greatest, and in consequence it is necessary to water jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. This pocket is water jacketed.

In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water jacketed, it follows that the Valve-in-Head type affords the minimum of water jacketed space that is possible to be secured for any given size of cylinder.

Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the large valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is much more perfect in the Buick motor because the incoming charges are purer.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other types of motors, a quicker ignition of the charge and a smaller loss of heat through the water jackets. The sum of these advantages is more power with less gasoline consumption.

The Development of the Buick Valve-in-Head Motor

Being a resumé of Buick engineering history since the year 1893, with some interesting comments on motor design by Walter L. Marr, the veteran Buick chief engineer

BACK in 1893 when Buick was building marine motors of the Valve-in-Head type, internal combustion motors were being built in very small quantities, and as there was little in the way of established precedent to follow, theory dominated practice in almost every branch of motor engineering.

In consequence, during the years that followed, the engineers busied themselves in experimenting with different types of design in an effort to overcome the difficulties that are always encountered when new and complicated mechanisms are built for public use.

A few years later when the possibilities of the motor car began to be dimly realized, and when Buick activities were being directed to the development of motor cars, Walter L. Marr cast his lot with Buick.

Unlike many of the designers of that time, Mr. Marr believed in sticking to the one type until he had really proven to his own satisfaction that the theories which appeared to him to be correct were either right or wrong.

Mr. Marr was a staunch advocate of the Valve-in-Head type, because its simplicity was backed by all that was then known of thermal efficiency and formed a more logical basis for development work than other types.

After a time he was joined by E. A. DeWaters. These two men have been designing Buick cars for years and are without question the leading authorities on Valve-in-Head motor construction in the automotive engineering fraternity.

Together they have experimented with practically every known type of internal combustion motor, and the small engineering laboratory in which they first started to work has now grown to far greater proportions than those of the whole Buick factory at that time.

The development work is still going on, and the possibilities of the Valve-in-Head design have not yet been exhausted. In Mr. Marr's opinion, there is no possible means of telling when perfection in this type of motor has been reached.

"The point is," he said "that each succeeding year finds a number of improvements in the Buick Valve-in-Head motor. This is because of the ceaseless research work that we are carrying on. The Buick motors in the cars we are now building are the best motors we know how to build today. Yet I have no doubt that the coming years will bring about other improvements, because the field is such an inexhaustible one in which to work that for years we have found some means each season of making our motors more powerful, durable and economical.

"A good many years ago we thought there would never be any better type of electric light than the old carbon filament lamp. But we know better now. And we thought the

same thing about sewing machines, and phonographs, and steam engines, and reapers and a thousand other manufactured products.

"I think this illustrates the folly of claiming that any product is the last word in design or construction.

Buick motor to its present state of efficiency, and it should be remembered that through all those years we have concentrated on the Valve-in-Head type. It has not been a hit-or-miss proposition with us, or a shifting from one type to another, but a steady development with a definite principle of design as the central point."

Concurrent with the development of the car along the lines mentioned above by Mr. Marr have been the steady increase in Buick popularity among motorists and the equally steady growth of the factory itself. And these two big facts have been made possible only through the satisfaction that Buick cars have given to Buick owners. The Buick Valve-in-Head motor has literally performed its way into the lasting favor of owners in all parts of the world.

Season after season finds Buick owners replacing their older Buick models with new Buicks, and the loyalty of Buick owners has had its continued effect in bringing new

Buick owners into the fold every year.

It is literally true that for a great many years, it has never been possible to build enough Buick cars to supply the demand in spite of the fact that every single year the manufacturing facilities have been greatly increased.

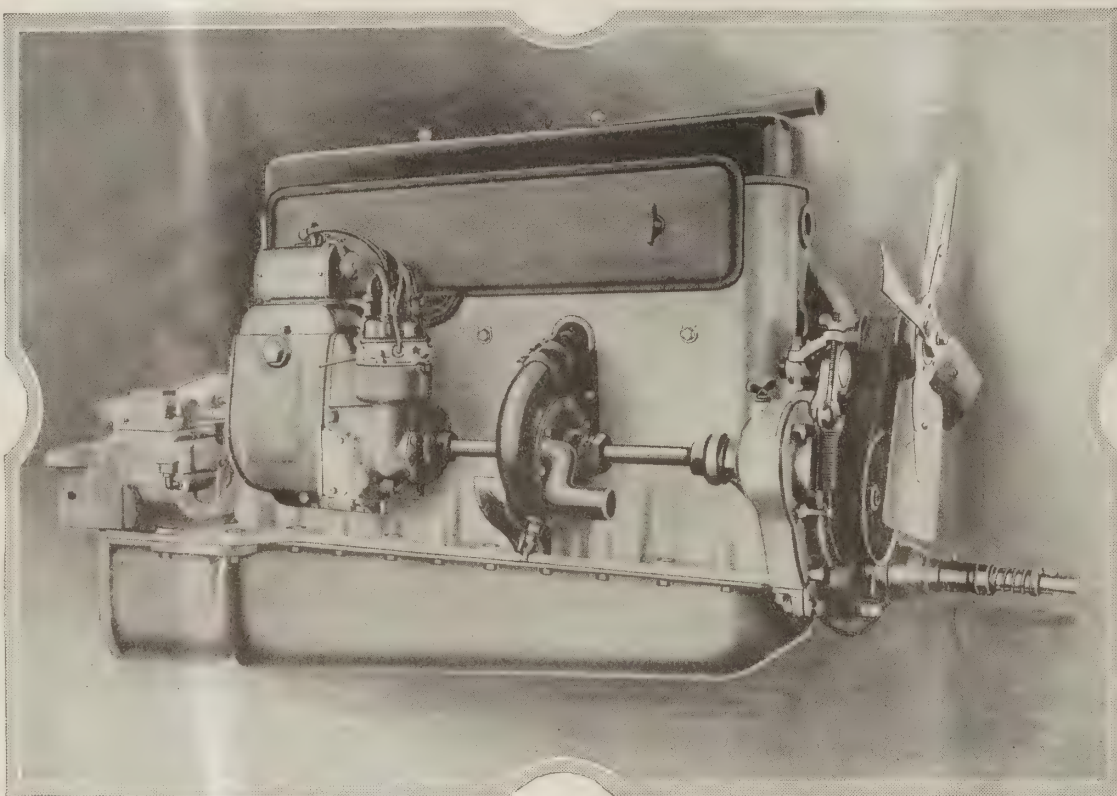
Intelligent buyers usually recognize as a mark of quality the trade name of a builder who has earned the reputation of making a product superior to other products of a similar nature, and in the motor world, Buick Valve-in-Head is that mark of quality because it stands for a correct principle of design developed to an unusually high degree.

"On October 16, 1916," writes Mr. J. R. Hasty, of Laurinburg, N. C., "I bought from your dealer, Mr. J. L. McNair, a Buick D-Six-45. I ran this car 7,400 miles and have never spent one cent for work on it or for repairs of any kind, except 50 cents that I paid to have the horn worked on.

"About July 13, 1918, I traded it to Mr. McNair for a new E-Six-45. As soon as my brother, who had a car of another make, found out I had traded my car to Mr. McNair, he immediately went to see Mr. McNair and traded him his car for the one I had owned. My other brother also has an E-Six-45 Buick.

"I had never had any trouble of any kind with the D-Six-45 Buick during the 21 months that I owned it, and traded it with the same tires that were on it when I bought it and they look good for several thousand miles more. I also have a 1910 model Buick. It is still running well and my children used it every day the past winter driving it to school.

"If there is any car that can be operated as cheaply as a Buick and with as much pleasure and comfort, and that finds as ready sale as a used car, I have never heard of it."

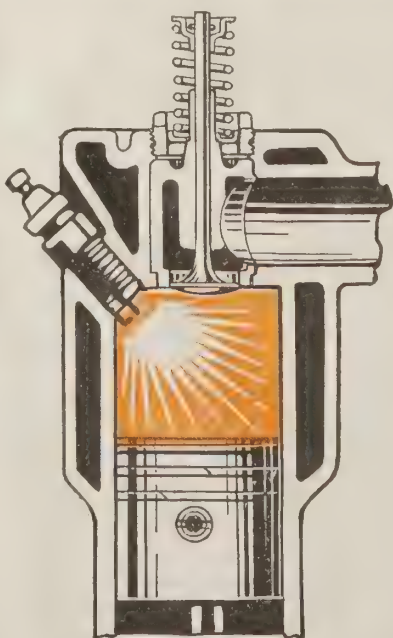


The latest type of Buick Valve-in-Head Motor

"The only guide we have—we who live in the present—is a just comparison with similar products now being marketed.

"Our engineering laboratories are equipped with every kind of scientific apparatus for making accurate comparisons as far as different types of motor car units are concerned, and from the results of our tests we are satisfied that there is no other motor built that can equal the Buick Valve-in-Head motor in power, economy and general all-around efficiency.

"It has taken us a long time to develop the





Sedan Owners are constantly finding new uses for their all-the-year cars, because such cars give a uniform degree of comfort in pleasant, cold or stormy weather.

Many parents in the outlying districts have found it possible, through the use of the closed car, to widen the scope of their children's education

by sending them to school in the bigger centers instead of to the smaller schools at the cross roads.

For general family use, and for both men and women drivers, the Buick sedan affords the advantages of a highly developed mechanical equipment plus an enclosed body both smart and modern in design.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars

BRANCHES IN ALL PRINCIPAL CITIES—DEALERS EVERYWHERE



The Buick factory is more than a mile in length and all Buick units are produced in this mammoth plant



A MOTOR car body must, in its way, withstand a considerable proportion of the road shocks and all of the weaving and twisting due to rutty, uneven roads.

Examine the construction of this Buick body. Its framework and sills are made entirely of selected oak and ash, with numberless wrought iron braces. To this frame, which flexes slightly under hard strain, is secured the perfectly moulded sheet metal covering, which binds the whole together and forms the basis for the smooth, glossy finish.

Both frame and body are built, assembled and finished complete in the Buick factory, under the immense advantages afforded by a highly trained organization equipped with the most modern tools of the craft.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars

BRANCHES IN ALL PRINCIPAL CITIES—DEALERS EVERYWHERE

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THE Buick BULLETIN

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In this Number—A Dixie Highway Tour—Page 14



I never wander 'mong the flowers,
But mem'ry will be straying
To other days and other hours,
When childhood went a-Maying.
O precious days, O happy hours,
How mem'ry backward lingers,
To pluck again the dewy flowers,
With childhood's rosy fingers!

—Anonymous

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E.T. Strong Managing Editor

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Flint, Michigan, U. S. A.

Number Ten

HER HEART'S DESIRE

WALK right in," said Miss Cynthia Ruggles to the two girls who stood at her front door. "There's a good fire in th' settin' room."

It was a cheerful room. A flood of frosty sunshine streamed through the four low windows and the fire glowed in the open Franklin stove. A bright braided mat lay on the hearth and a tortoise-shell cat was curled up on it. A canary sang in its gilded cage; a globe of goldfish stood on a little stand with a crimson cover. Visitors did not notice that the furniture was old and worn. They all said, as these girls did now: "My, ain't it cozy and homelike!"

If Miss Cynthia had been a sophisticated woman, she would have called her taste a love of color. As she was a simple, narrow, little country soul, she only beamed her satisfaction at such flattery as this.

"We come, Miss Ruggles," said one of the girls, "t' ask a great favor of you. I hope," with a constrained giggle, "you're real good natured this mornin'."

Her hostess assumed a prim air of importance. She had all of woman's thirst for power, with great good nature and a soft heart. She waited in grave silence for what was to come.

"We want t' know," Delia Richardson went on bashfully, "if you'll learn us how t' make wax fruit. I'll do as much for you some day, an' so'll Sophy."

Sophy nodded her head.

"Oh, I'm agreeable," Miss Cynthia assented, her eyes beginning to shine. "They ain't nothin' I love better t' do 'n fuss with wax. It's elegant work."

She crossed over to a closet and took a paste board box from the shelf. She carefully lifted out a large wicker basket. It was filled with representations of apples, oranges, pears and other edibles.

"There," said Miss Cynthia, trying to veil the triumph in her tone by a sigh at the basket's weight as she set it on the centre-table. "I'm fixin' this up t' send t' th' fair nex' fall."

"Oh, look a' that cucumber!" exclaimed Delia. Even the silent Sophy emitted a cry of delight.

"I never could make 'em like this! could I?" proceeded Delia. "Why, they're just as natural! Seems as if I could bite right in that plum. An' raisins, too!"

"I made up them raisins myself," the exhibitor explained with dignity. "I'm goin' t' make a potato, too, an' some green peas. I guess I can. It's just as fascinatin' when ye git t' doin' it! I'd re'lly love t' learn ye."

Delia expressed their common thanks. "I've always heard about your beautiful fruit," she said, "but I never seen any of it before. Is it hard t' do?"

"Not very when you've got th' moulds," Miss Cynthia reseated herself and picked up the cat. "If you think my fruit's so nice,"

By RUTH HALL

she reflected aloud, "I wonder what you'd 'a' said t' Sarah Gibbon's flowers. They was lovely."

"Wax?"

"Yes. Just made out of common white wax like them is. But, I declare, you'd most



She fell to thinking of Sarah Gibbons

think they was growin'. You'd ought to seen her fuchsias. They was just as natural! One time she sprinkled some o' th' leaves with cologne, so's you could smell 'em, too."

The girls gave little staccato shrieks at this ingenuity. "Where is she now?" asked Delia.

"Oh, she's married. She was old Squire Gibbons' daughter. They lived nex' door there, where th' Lockwoods is now."

"But she got married," continued Miss Cynthia, mournfully, "an' moved off int' York State. I've wondered often ef she kep' up her wax flowers. Seems if she'd ought 'o."

"Yes, indeed," said Delia.

After the friends had gone away and Miss

Cynthia sat down again by the fire, she fell to thinking of Sarah Gibbons; not, as usual, with a questioning interest, but with a fluttering feeling of tenderness that was almost painful in its intensity. The talk, and the sight of the two inseparable companions, brought back memories of her own girl friend and all the confidences, plans and pleasures of years ago; most of all, of their absorption in their art.

"She's got some one t' take care o' her," mused Miss Cynthia, "an' a lot o' little children. An' here I be, settin' by my fire, all alone. It mus' be pleasant t' have a baby what belongs t' ye. I wonder how it would seem?"

Before she went to bed that night, Miss Cynthia wrote to Sarah Gibbons. She asked about the children, and waxed almost sentimental over a namesake of her own. An answer came, after so long a time that Miss Cynthia had given up all idea of hearing. Mrs. Duncan wrote kindly. She said that she had been hindered from writing before, but that Cynthia's letter brought back old times, and made her real homesick. "I'd like to see you first rate," she wrote. "Why can't you come out and make us a visit?"

Miss Cynthia let the letter fall into her lap. "I'd like t' go," she said to herself. "It 'u'd seem queer t' shut up th' house, an' I s'pose I couldn't sleep in a strange bed. But I'd like t' go."

Her arrangements were soon made. The cat, the canary, and the goldfish were committed to the care of Lucinda Lockwood, whose oldest son was to go all over the house each day, "on account o' th' insurance."

"I may be gone two weeks," she announced to the neighbors who flocked in to say goodbye, "but, likelier, it won't be mor'n one."

"It'll seem awful queer here, without you," some one remarked. "We won't have no place t' run in."

"No," Lucinda Lockwood added, "an' I shell miss th' smoke out o' th' kitchen chimbley. I always feel's if I mus' look over ev'ry mornin' t' make sure Miss Cynthia ain't died in th' night."

Miss Cynthia's heart glowed at these tokens of good will. It was not the first time since her mother's death left her alone that she had vaguely understood what she could not express—that the village life encompassed her and cared for her. Every one was free to run in at all times, and apt to call upon her for any sudden pleasuring or any dire need. It all was very sweet and dear to her, now that she was about to turn her back upon it.

Mrs. Duncan's boy, Addison, midway in his 'teens, met her at the station. He took the "company's" numerous parcels.

"Your ma mus' take a sight o' comfort," she observed, "in havin' someun t' fetch 'n' carry for 'er. I wisht I had a grown-up son."

"I do' know," said the boy, grinning shamefacedly, "mebby, if ye had t' mend my clo'es, ye wouldn't. Ma'd 'a' come out herself," he went on, "but Benny had earache 'n' cried." "Earache! Oh my! That's dretful. Can't ye do nothin' for it?"

The boy stared at her. "I guess ye'd think they done somethin' for it if ye'd heard 'em up las' night. Ma never slep' a wink after two o'clock. He *will* play in the snow," said the elder brother disapprovingly, "an' then he gits th' earache. There's ma now, an' th' kids, in the window."

There was a prodigious amount of giggling and ducking and waving of hands. Miss Cynthia was quite bewildered and altogether delighted by it.

"How she has fell off!" was her unspoken comment upon her old friend's appearance, and — though that she could not know — these were the very words that Sarah was saying to herself. The one had grown prim and precise, and dressed in the quaint style of her youth. The other wore the air of one who knew the world, but her hair was roughened by little fingers, and her face worn and thin. The five children were a sheer delight to the eye. Miss Cynthia kissed them, one after another.

"They's nothin' like young folks, is they?" she said wistfully.

"No, indeed, they ain't." Mrs. Duncan gave the baby a quick hug. "A house don't amount t' much—Lizzy, if I see ye lay finger on your little brother again—"

The trio who were scuffling and showing off in the corner tumbled to the floor in a confused heap. It took Addison and his mother both to disentangle and shake them out properly. Miss Cynthia remarked upon the big boy's general goodness after he had left the room.

"He is good," assented the mother, fondly. "He ain't over quick at learnin', Addy ain't, an' him 'n' me 'd like t' have him quit school; he's goin' on seventeen. But Samyell is all for havin' him graduate. It frets me th' continual time. He's got a cough, for all he looks so rugged. He'd be a good deal—Lizzie, stop I tell ye—a good deal better off in th' store. 'long 'th his gran'pa. It stan's t' reason that settin' all day is bad for 'im."

"Then I wouldn't have it," expostulated Miss Cynthia, much alarmed. "I'd put him in th' store."

"His pa won't see it that way," Mrs. Duncan frowned worriedly.

Her visitor looked properly sympathetic. "Samyell's as good as gold," proclaimed the loyal wife, "but if I do say it myself, he's awful set."

They tried to talk above the noise of the children, and presently Mrs. Duncan went off to see about supper. "I've got a girl in th' kitchen," she explained, "that ye can't trust t' put a potato on t' boil." When Miss Cynthia was left to herself, she looked around her chair-back at her tittering, blushing companions. "Come see Aunt Cynthy, sonny," she began, ingratiatingly, holding out her hand to Benny.

"You ain't my aunt."

"Don't ye want"—she racked her brains to please them—"t' hear a nice story 'bout a ole hen 'n' her little bits o' chickies?"

There was an instantaneous avalanche of young Duncans. Miss Cynthia had never known a tenderer emotion than that which filled her heart as she sat and told an old,

foolish story, with their eager, upturned faces to spur her on. Directly she ceased. "Tell it again," demanded Benny, pounding on the chair arm.

"Oh, not that one. Shell I tell ye 'bout—"

Both little girls puckered up their faces. "I want t' hear 'bout th' chickabiddy," they said in duet.

Miss Cynthia repeated the tale, with an attempt at lopping off superfluous ornamentation. These efforts were speedily detected and checked. Not one silly syllable could be omitted. Then she finished.

"Tell it again," said Benny.

"Once they was an ole hen," began Miss Cynthia in a droning tone. A shout arrested her. "Ye said old chickabiddy."

Mrs. Duncan thrust her head in from the

He was so far from intending an insult that none could be accepted. Yet Miss Cynthia felt that she hated him. She had never been called an old maid, to her face, before. She hailed the bedtime hour for the children. It gave Sarah a little respite, too, and a chance for something more than a half-hearted attention to the information as to whom Lije Buckley married, and what became of the Terwilliger girls.

"D'ye ever do wax flowers any more?" Miss Cynthia inquired.

"Land! no. I ain't touched 'em sence Addy was born. I don't have no time."

Her old friend regarded her mournfully. "But sech talent as you had, Sarah!"

Mrs. Duncan laughed rather bitterly. "A married woman ain't no use for talent."

Yet, when she took Cynthia in to see her children, asleep, fond tears filled her eyes. "It's better'n wax flowers, Cynthia," she said. "I let Benny have that big basket o' fruit you made for me, one day when he had th' mumps."

Next morning there was a peremptory kicking on her door before the wintry daylight appeared. There were loud voices that would not be gainsaid demanding the chickabiddy. Miss Cynthia was a late riser as country people go. She did not relish the early breakfast, nor the horrible bustle and stir in adjusting school coats and hunting up mittens and tippets.

Indeed, it seemed to the peaceful, sober spinster that Mrs. Duncan did naught with her days save walk up and down with the baby, brave the quick-tempered Mame, serve meals, and welcome, or speed, her family. "Samyell" was a good provider, his wife declared, and showed himself, in his way, devoted to his home. But he was fault-finding and officious—"a hen hussy," his guest considered him.

Mrs. Duncan found a certain comfort in retailing her daily grievances. She had no notion—so immeasurably superior do the married deem their state—what deductions her visitor was drawing. It seemed to Miss Cynthia that next Thursday would never come. She felt that

she could not, in decency, start home under a week, but how she longed for the sunny little rooms, her cat and canary! They were company, but never cried, nor teased for chickabiddy. They showed affection without interrupting her most exciting narrative by an inopportune header down the basement stairs. She wanted to order her own meals, and have pie as often as she chose. "Samyell" didn't believe in pastry, and Sarah had given up making coffee because no one drank it besides herself.

"You mus' come again, some time," Mrs. Duncan said. "Th' visit's done you good."

How sweet it was that evening to seat herself, before the open fire in the little rocker, to rest, in body and in spirit, from the turmoil and the trials of those long seven days. Once in the night she started up, dreaming that the baby had the croup.

"Land sakes," she thought, "I wouldn't be Sarah Gibbons!"

At that very same moment Mrs. Duncan, many miles away, was creeping back to bed after a stealthy visit to Lizzy's crib, to see that she was covered up. As she softly drew back the quilt, her hand touched the baby's rose-leaf palm. Tears moistened those weary eyes.

She took the warm little body on her arm. "Land sakes," she reflected, as her head sought the pillow, "I wouldn't be Cynthy Ruggles!"



"It's better'n wax flowers, Cynthia," she said

dining-room. "Havin' a good time? Don't wake th' baby. He's just dropped off t' sleep."

When her husband came home to supper, he found their guest surrounded by three impatient infants greedily following the latest repetition of the favorite tale.

"Them young ones won't give ye no peace," he observed gayly, shaking hands with her, "now they've found out you can tell 'em stories." He smiled as though this were a rare trait. He soon turned his attention to weightier matters.

"Sate," he called, "Ain't tea 'most ready? I should think, with a girl in th' kitchen, ye could have meals in some kind o' season."

Mrs. Duncan looked much mortified. "In a second, Samyell," she said. "Baby woke 'n' had t' be took up. Is th' biscuits done, Mame? Then come on."

It was a very nice supper, but Miss Cynthia had a headache now. "I'd a' offered ye a cup o' tea when ye first come, Cynthy," said her hostess, "if 'twasn't Mame is so put out if ye go in th' kitchen between meals. 'Tain't none too easy gettin' a girl for a family th' size o' ourn."

"We'll have t' be lookin' up a beau for Miss Ruggles," announced the gentleman of the house, biting into his cake. "Mus'n't have no ole maids 'round here."

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

GENERALLY speaking, the man who buys a Buick car has very definite ideas as to what he expects from a motor car. The Buick Motor Company has deliberately fostered this class of trade—has designed cars for it—built for it—advertised to it.

As a result, the man who buys one Buick car will some day want another, because only in the Buick car will he find the combination that he wants.

This may sound like a strong statement. Let us analyze it.

Buick advertising is concentrated on just three main points: 1. The correctness of the Buick Valve-in-Head principle of design. 2. The value of steadily developing the mechanical equipment from year to year, rather than bringing out something new and different each season. 3. The complete feasibility of combining power, stability, comfort and beauty in a car, making it dependable under every possible driving condition.

As a rule, the man who buys a motor car is first attracted to that car by advertising or by hearing about the car from friends. Talking with Buick owners soon convinces a man that the statements made about Buick cars in Buick advertising are correct. Purchase and use of the car demonstrate still further that the Buick car is as good as Buick advertising says it is—and further, that all of the attributes mentioned have a real place in motoring service.

FOR example, beauty is of no service in getting a car out of a mud-hole. You need power. Power, on the other hand, may be entirely secondary on a social occasion where appearance is quite essential. While everything that goes to make up performance would be of little value to the owner if he could not depend upon it with reasonable certainty.

Buick owners find this happy combination in Buick cars, and for this reason they continue to buy them. Now that the demand for new Buicks is overwhelming and it is difficult to purchase them in any territory, Buick owners are disinclined to take a second choice. They know what the Buick car will do for them—what it has done for them in seasons past. And rather than experiment with some other make that they are not familiar with, they are having their present Buicks put in

repair, repainted where necessary and are continuing to drive the cars upon which they have learned to depend.

For the point is that if a used Buick is worth a certain amount of money to somebody else, it is worth at least that much money to the present owner, even though the market value is high. There is no set number of seasons that a Buick car can be driven with satisfaction—no particular number of miles to be indicated by the speedometer at the end of its usefulness.

The Buick Motor Company has never encouraged the purchase of a new car each season. Rather, it is proud of the fact that many cars built by this Company years ago are still giving satisfactory service—just as proud as it is of the performance of the very latest models.

THERE is no reason why a motor car should be put aside at the end of the season, like a straw hat. And the men and women who buy Buick cars do not, as a rule, follow this practice.

Time and again the Buick Motor Company has emphasized the fact that the purchase of a motor car is an investment in transportation. And for this reason it is the part of wisdom to get the most out of that investment. To be sure, it is the sort of investment that returns no money to the purchaser, just as the man who buys a home gets no return in dollars and cents. But in both cases he gets his money back many times over in the form of advantages that more than make up for the cost of purchase and upkeep.

But if a man were to sell his home every year, at a sacrifice, he would hardly consider that he had done as wisely as he would if he had waited until that home was no longer suited to his needs. A new coat of paint, and perhaps a few dollars spent on the roof or the plumbing, would have made the house as good as new.

AND that is exactly what thousands of Buick owners are doing today with their Buick cars. It is surprising what a little money well invested will do toward making a Buick just as good as the day it was bought. Of course, the expenditure will vary with each car, according to the length of time the car has been in service, the treatment it has

received and the conditions under which it has been run.

The foundation is there to work on—a foundation of good honest materials and thoroughly proven correctness of design. The lines of Buick cars have always been conservative and in good taste, and a new coat of paint, properly applied, will often so change the looks of a car that has begun to look weather-beaten that it would never be recognized as the same model.

AND the paint is the most perishable part of all. A little tuning up, a tightening of the body bolts, replacing a worn part here and there, and the performance of the car will be in keeping with its rejuvenated appearance.

These facts are well-known—in fact, they account for the high re-sale value of Buick cars. The man who purchases a used Buick sees to it that these things are done, and then proceeds to cash in on the investment that was sacrificed by the former owner. If this condition were not generally recognized, the re-sale value of a Buick car would be no higher than that of other cars in the same price class.

The re-sale value of Buick cars was never so high as it is today, nor has the Buick re-sale value ever been higher in comparison with that of other makes of cars selling at about the same price when new. Yet there are comparatively few Buick owners who are selling their cars in this apparently favorable market.

LAST year's Buick is worth more to the man who owns it than it is to anybody else, particularly if it is not possible for him to get a new Buick at present. He has driven the car so long that it has become a part of his daily life. Driving it is as automatic as the act of walking. Behind its wheel he is as much at home as if he were in his favorite easy chair, and as comfortable, too. He knows its power, its ability, its constant readiness for service.

He bought it originally because it perfectly answered his requirements. Continued use in all kinds of weather and for all sorts of business has wedded him to it.

He knows that the only substitute for such a car is another Buick.

The Buick Sheet Metal Factory



This is the great Buick sheet metal factory, in which all Buick stampings radiators, oil lines and fittings are made

ANOTHER recent expansion in the Buick factories at Flint was the rearrangement and enlarging of the Buick sheet metal factory. After the construction of the new brass and aluminum foundry, the building formerly occupied by the foundry was remodeled, and as it was right next to the sheet metal factory it was a simple matter to connect the two buildings in such a manner as to convert them into one big building, to be used exclusively for the making of sheet metal parts and radiators.

This arrangement has practically doubled the floor space of the already large factory, and has made possible the carrying out of the progressive system of manufacture perfectly.

As is the case with all other Buick factory units, the sheet metal factory is connected with the Buick system of private railroad tracks. At the extreme end of the building the tracks have been sunk several feet into the ground, so that when the freight cars are drawn up alongside the building, the floors of the cars are on a level with the floor of the building. Instead of loading docks, wide doors open directly beside the tracks, so that the minute the electric floor trucks leave the freight cars with incoming material, they are inside the building. Beside each door is a big scale, upon which the material is weighed before going to the stock room to be checked and sorted.

Inspection of the stock room is interesting from two standpoints. In the first place, the quantity of material there is almost astounding. Thousands of tons of metal sheets of innumerable sizes and thicknesses are stored in orderly rows and bins, each kind being plainly marked with a part number to identify it when drawing out material for use in manufacture.

In the second place, one cannot view this immense variety of material without being impressed with the importance of sheet metal stamping in the motor car industry today. It is hardly necessary to say that tremendous strides have been made in the manufacture of metal stampings since the advent of the motor car. One of the earliest problems in the building of motor cars was that of reducing the weight without sacrificing strength, and in consequence sheet metal stamping was given a great deal of attention.

It was soon found that a great number of parts that were then made from metal castings could be made from stampings very profitably, but it was also found that the stamping equipment then in use was quite limited in scope and that this equipment would have to be very materially improved upon before full advantage could be taken of the possibilities that lay in sheet metal parts.

Some of the metal stampings used on motor cars are quite simple. A great number of them are decidedly complex and cannot be made except with the aid of expanding dies. An idea of the difficulties encountered may be had

when it is pointed out that in such cases the metal is not only formed to shape but is actually stretched while cold by the pressure of the expanding die, necessitating that the outer edges of the metal be held very firmly in place during the operation. Add to this the fact that a great deal of the metal so stamped is of very heavy gauge steel that is not readily moulded without wrinkling and buckling, and you have a fair conception of the problems confronting the manufacturers.

The Buick Motor Company was one of the pioneers in this important field, and today the visitor may wander among the immense toggle presses and lighter machinery and see dies and machinery developed by Buick experts that can be found in no other sheet metal factory in the world. Many complex operations are now being performed in this factory as part of the routine of production which a few years ago the foremost stamping manufacturers in the world declared impossible.

In all, between four and five hundred parts are made in the Buick sheet metal factory, from small washers up to the metal covering for the bodies, and the types of machinery used are cunningly adapted to the various classes of work.

For example, the rear wheel panels of the bodies necessitate a press of unusual capacity. In following out the stream lines of the body, the upper parts of these panels are rounded outward, while the lower parts have a deep, curved depression to make room for the rear

fenders and wheels. So the presses used for making these panels are of the hydraulic type, with a capacity of thirty tons pressure. Oil is the medium used to furnish the power, and a complete oil compressing equipment is operated in the factory to supply this battery of presses.

Another heavy operation in making Buick bodies is that of forming the shroud, or forward part. This is stamped from a single sheet of heavy metal, complete in one operation, by the use of a most ingenious expanding die developed in the Buick sheet metal factory. This die is used in immense toggle presses, which are also used for making fenders, radiator shells and other large parts.

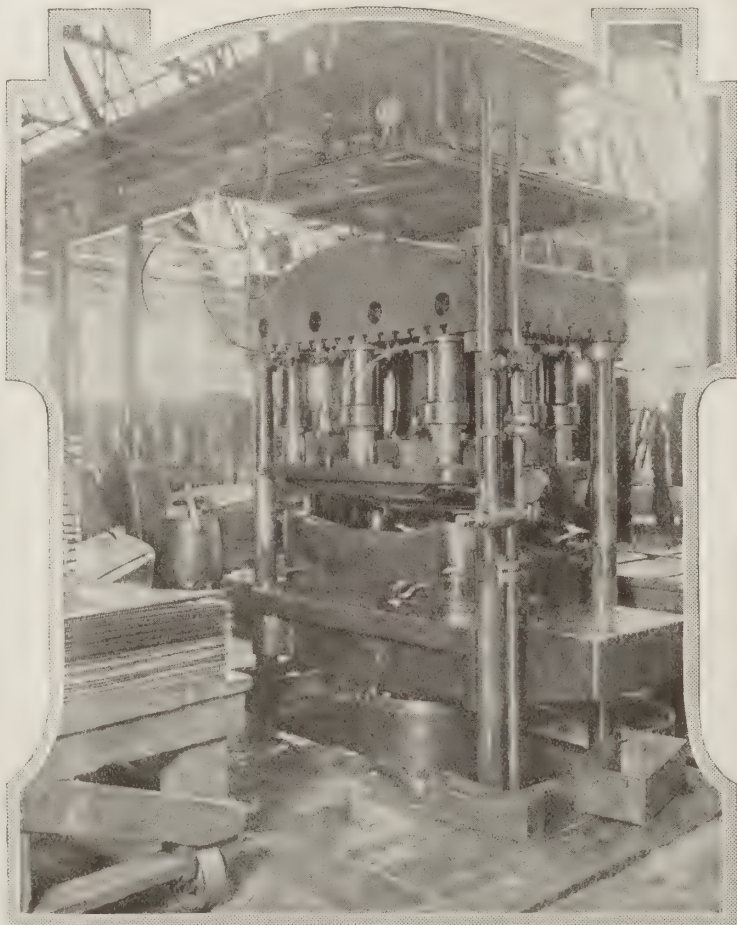
Another interesting machine is the press that performs three succeeding operations simultaneously on the sides of the Buick hood. Three men work side by side at this machine, which is fitted with three sets of dies. The first man lifts the sheet from a pile at his side and places it under the first die. While the machine is moving upward again he passes the first piece along to the second man, who puts it under the second die, while the first man is putting in a fresh sheet on the first die. In the same manner, the second man passes the sheet along to the third man, and this method is kept up continuously, so that at each descent of the dies the three operations are completely performed.

A good many operations are required to make the Buick fenders, aside from the stamping out of the big main blank. These fenders are strongly reinforced along the edges with metal strips into which steel wires are crimped. The blanks and wires for the strips are fed into machines equipped with revolving discs in pairs, and it is these discs that turn the edges of the metal over the wires and bind them firmly in place. After this, it is necessary to form the strips to conform to the shape of the finished fenders, and this is done by fastening the strips on forms and passing them between a pair of discs. In this way, two strips at a time are fashioned to shape.

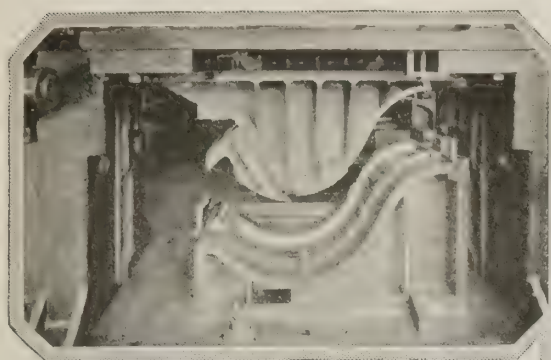
One powerful machine does nothing but flatten steel washers. A revolving bed is divided into sections that pass consecutively under a powerful hammer, while the operator feeds the washers to be flattened into the other sections. After flattening a stream of compressed air blows the washers into a hopper.

Among the other parts manufactured in this factory are included the radiator mud pan, the side aprons, drip aprons, mufflers, the remaining body panels, gasoline tanks, radiator fans, battery boxes, oil piping and fittings and the radiator cores.

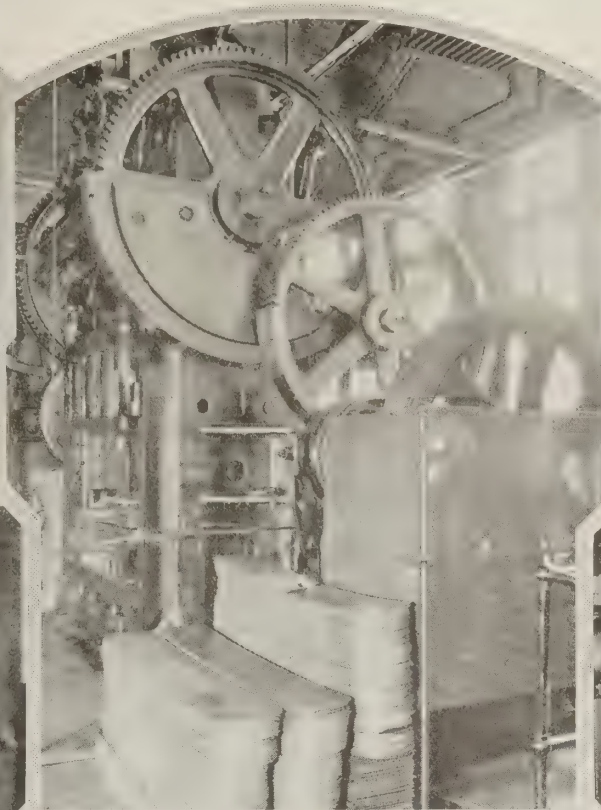
Photographs of a number of the operations involved in making Buick sheet metal parts are reproduced here, to give a clearer understanding of the thought and inventive genius that have contributed to the high quality of these parts on Buick cars.



Buick rear body panels are stamped out on this hydraulic press, which has a pressure of thirty tons



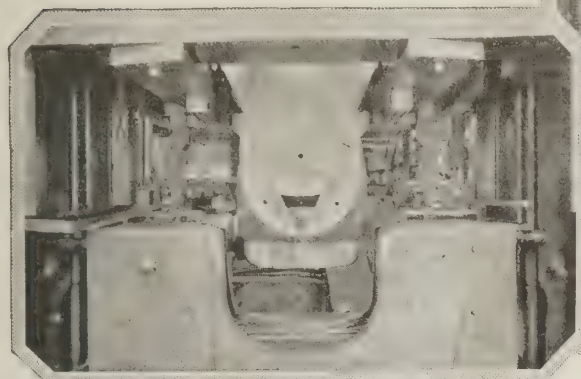
Front fender die in place in the big toggle press



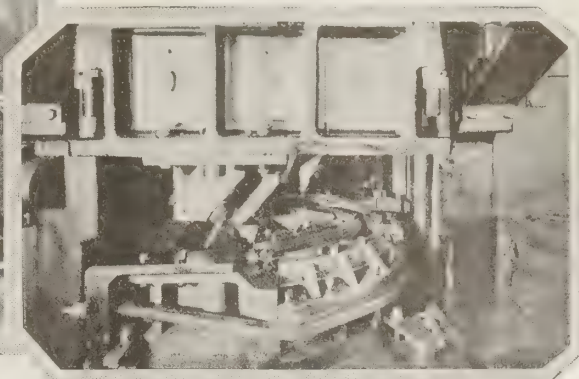
One of the immense toggle presses used in making Buick fenders, cowls and radiator shells



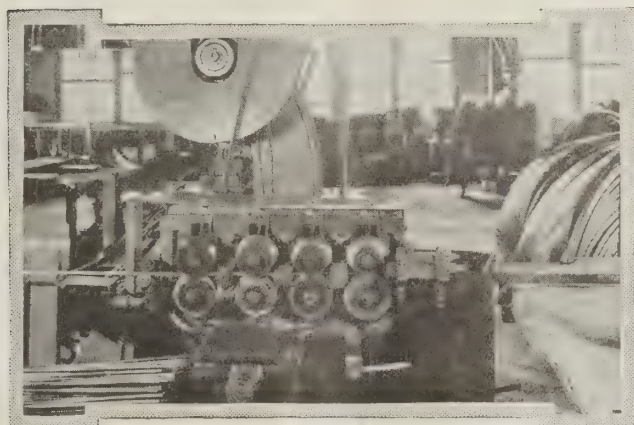
This picture shows how Buick radiator shells are stamped



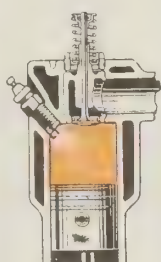
Expanding die used in making Buick body cowls



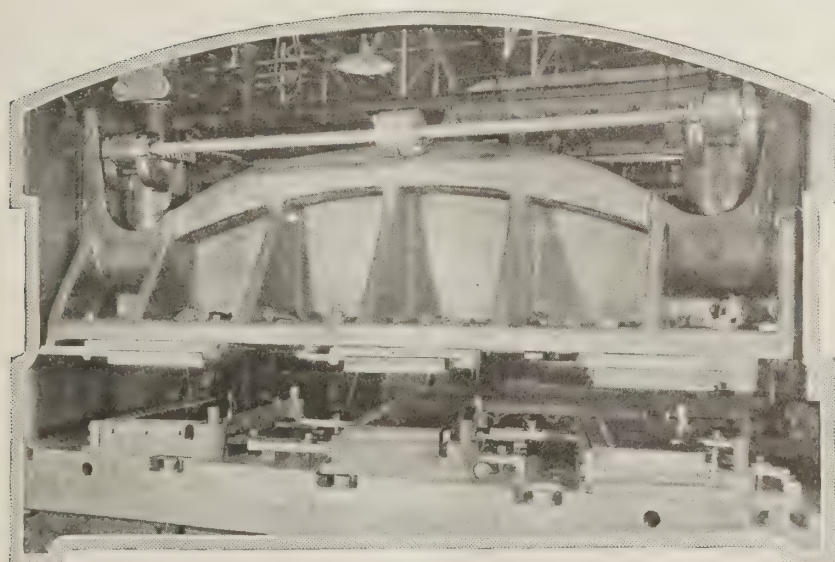
The rear fender die exerts its pressure sidewise



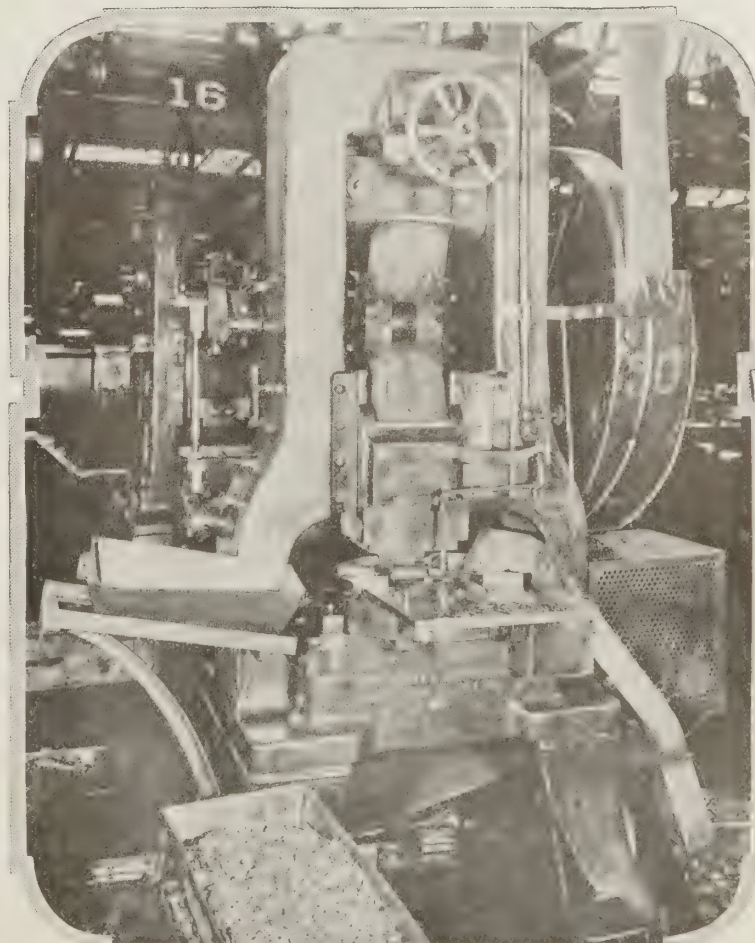
This machine crimps the steel wires into Buick fender reinforcement strips



The reinforcement strips are then shaped by means of this form, between two discs



This press performs three operations on the sides of Buick hoods simultaneously



Washers are flattened under great pressure in this machine and are blown by compressed air into the hopper



Small irregularities in Buick cowls are smoothed out under this hammer



Buick fenders are finished by hand in order to insure strength and beauty

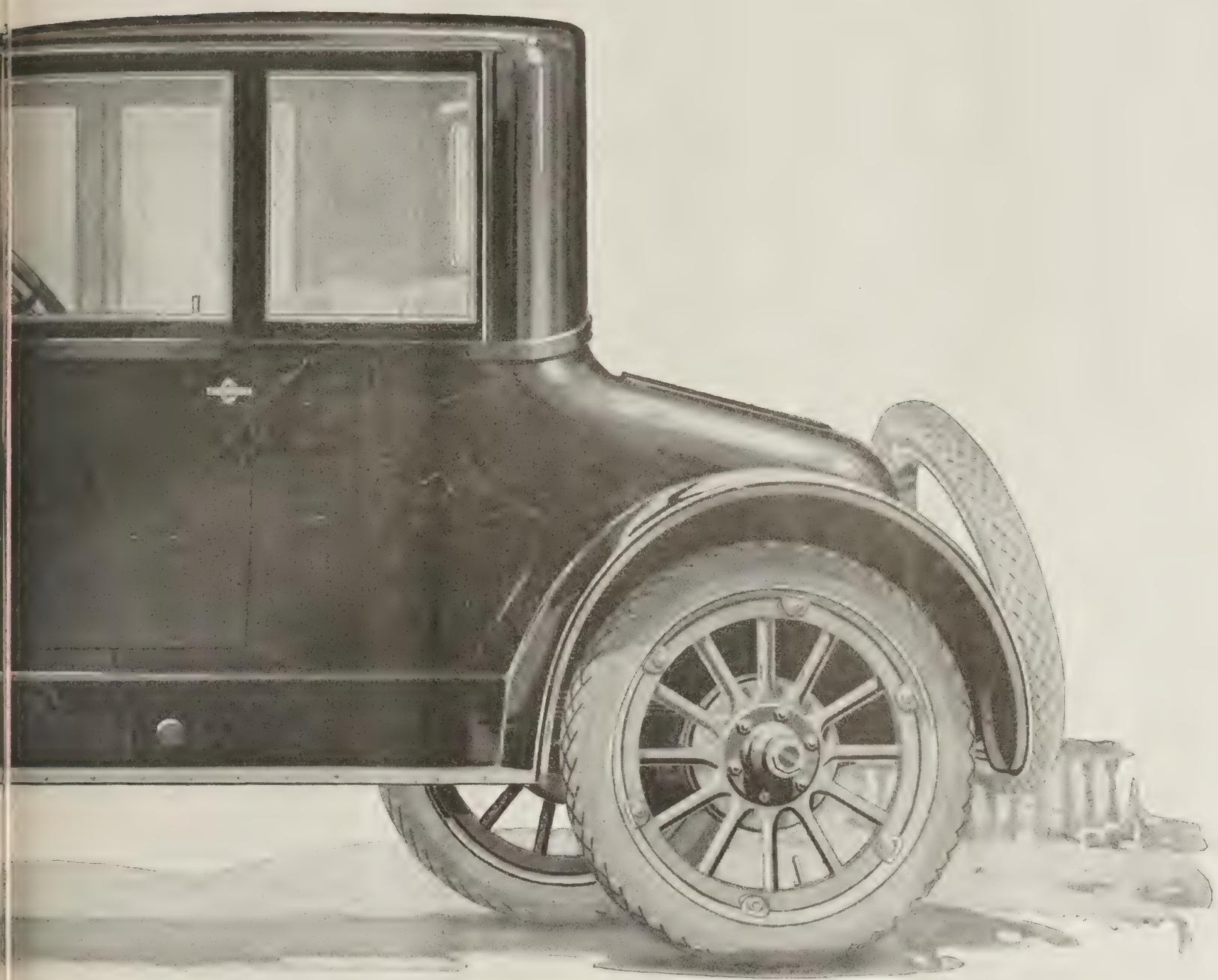


The Buick Model

THE Buick Car has an international reputation, and an international following. Wherever the paths of civilization lead, you will find well-satisfied Buick owners.

Such a condition is not the result of chance. It has been built up by many years of consistent adherence to

These two features have a definite meaning for

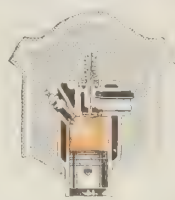


Six-46 Touring Coupe

two main principles, namely: The constant improvement of the car itself, and the perfecting of an efficient service organization. International endorsement is the best possible proof of the breadth of Buick serviceability and Buick service facilities.

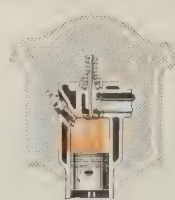
owner of any Buick model, in any part of the world

The Buick Car in Atlanta



It is always interesting to meet the owners of motor cars in various cities, because a more accurate conception of general motoring requirements can thus be obtained than in any other manner. There are always very definite reasons for the popularity of a certain make of car in any locality.

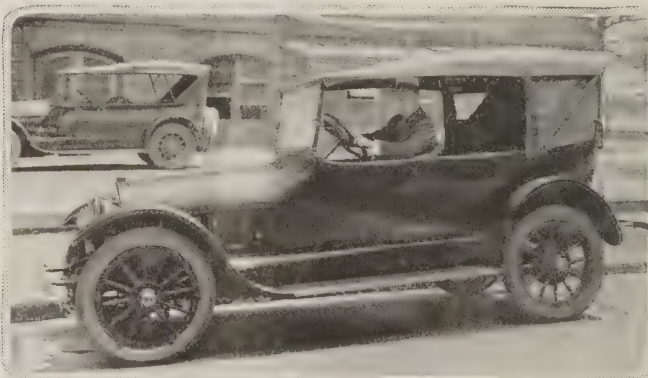
In and around Atlanta there are many hills. Consequently there are many Buick cars. Better still, Buick cars are extremely well represented among the most select families of Atlanta, where good taste and comfort are demanded of a motor car, as well as consistent, satisfactory performance.



Mrs. John E. Smith



Mr. Frank S. Ellis, Merchant



Mr. E. L. Harling, Broker



Mr. Lucian York, Merchant



Miss Lucile Kuhrt, Society Belle



Mrs. H. W. Dent, wife of prominent lawyer



L. P. Stephens, M. D.



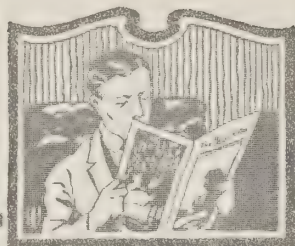
Miss Alexa Stirling, National Woman Golf Champion



Mr. Emil Dittler, Manufacturing Stationer

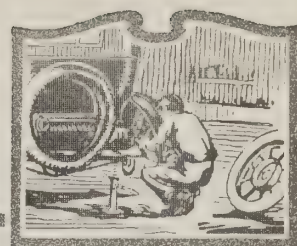


Mrs. C. H. Black, wife of president of real estate board



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Brakes

NOT enough stress is laid upon the importance of brakes on an automobile. It is as important to be able to stop a car as to start it. With the average driver, the brakes receive more wear than any other part of the car, which is of itself proof of their importance.

For this reason, a great deal of attention has been paid to the design and material in Buick brakes, and few cars will be found to have brakes as strong and efficient.

There are two sets of brakes on Buick cars, both operating on brake drums securely bolted to the rear wheels. The emergency, or hand brakes, are of the internal expanding type, operating against the inside of the brake drums. The service, or foot brakes, contract around the outside of the brake drums. Both sets are lined with high grade brake lining material and have strong, positive connections and simple adjustments.

Because of their convenience, the service brakes are the ones that receive the greatest wear, and they should be adjusted from time to time to keep them responsive to a reasonable pressure on the pedal.

The brake lining is made of specially prepared asbestos interwoven with brass wire.

There is probably no other material that could withstand the friction so well, but even this wears down after constant use.

It is a simple matter for the operator to keep a check on the condition of the brakes, and as soon as it is discovered that the brakes do not stop the car as promptly as they should, they should be adjusted.

With each Buick car is an instruction book, and in this book will be found complete directions for adjusting the brakes. After long-continued or hard use, the brakes may need relining. If the owner does not thoroughly understand the directions or does not wish to do the work himself, any Buick dealer can take care of the adjustment or relining for him.

The proper handling of the car has a great deal to do with the life of the brake linings. This applies to all driving conditions, and even

in hilly countries it is possible to keep the brakes in good condition for a long time by observing a few simple rules.

In going down a steep grade, the novice is apt to make severe use of the brakes, whereas the experienced driver will not use the brakes at all, and still have the car under perfect control. This is accomplished by closing the throttle so that the motor turns over slowly and does not permit the car to go beyond a safe speed. If the grade is very steep, it is only necessary to shift to second or first speed, following the same method. Never attempt to use reverse, however, as the results might be disastrous. Neither is it advisable to shut the spark off entirely, as it is better to have the engine running so as to have power available in case of emergency.

In city driving, do not drive fast between blocks and jam the brakes on hard at the corners. Let the motor slow the car down as much as possible before applying the brakes, and do not put more pressure on the brakes than is necessary to stop at the proper point. A good set of brakes can be locked so tightly as to slide the rear tires on a dry pavement, causing unnecessary wear on the tires and brake linings. A little study of the use of brakes will keep them in perfect condition for a long time.

*In driving downhill, use
the motor as a brake.*

When Better Automobiles are Built, Buick will Build Them

Finds Buick Service Perfect

MR. THOMAS C. WATEROUS, of Henry, Ill., recently wrote: "I have driven my old friend, Buick B-37, over 40,000 miles. Last July I made a four-mile climb in the mountains of Maryland. This was en route to Connecticut, via the National Highway and return through southern New York, where I was routed by the A. A. A. to Henry, Ill., a total distance traveled of 2,978 miles, and the best part of it was that I had no engine trouble.

"The only trouble was due to a bad road in Bridgeport, Ohio, where I broke a spring. Then again, in Oberlin, Ohio, I found some bad road, where I broke another. But here again I found the satisfaction in the Buick name, for I found Buick service in both places, as well as in every place I stopped, so perfect that my broken springs did not delay my trip. For example, in Wheeling, W. Va., I arrived about 10 o'clock at night and the Buick agency had my car ready with a new spring at 8:30 the following morning. On my return in August last, I at once made my plans for another Buick and through the courtesy of your Chicago branch I was able to get an E-49. From the above you can readily see why I am a Buick Booster."

"One Best Friend"

MR. CLARE E. ADAMS of Dillon, Montana, writes, "When I say that I purchased a Buick roadster, it gives me the feeling that I have purchased wisely. It has been an all around car for the whole year and although I have put it to the test on many occasions, I have never found it wanting.

"I have never encountered a hill that I could not climb; I have never spent the night in a clammy mud hole trying to coax the car out of the bog and I have never been stalled in the still nights of bleak December on account of engine troubles. Those 'little pleasures' of motoring have never been mine.

"After driving heavier cars and ascertaining the expense of maintaining them I have returned to the Buick, a wise and happy individual, and I feel it is my one best friend at all times."

Always Among Friends

THINKING perhaps you might be interested in the trip of a Buick driven by a woman, I thought I would tell you my experience," writes Mrs. Mary E. Burchett, of Seymour, Iowa.

"I have driven a Buick six for the past two seasons with only five punctures and no other trouble of any consequence.

"My mother, father and I went on a five weeks' tour to and through Colorado in the summer of 1918, driving to Estes Park and return. No matter how steep the mountains or poor the roads, the Buick went right on.

"The many courtesies shown us at the Buick garages along the route added much pleasure to the trip and we always felt we were among friends. Many were the words of praise we heard for the Buick.

"We traveled 2,300 miles at a total expense for the car of \$41.25. I certainly recommend the Buick as the car for women."

More Pleasure Out of Life

I HAVE gotten more pleasure out of life during the two years I have driven my Buick D-45 than in any other two years. I appreciate very much the Buick Bulletins and I hope they continue to come," writes J. A. Lenhart of Ellsworth Station, Ohio.

"Strong Advertise"

MASTER George Carrington Brite, small son of Mr. Jay Brite, of Springfield, Mo., was sent to bed one night not long ago, and on the way up he turned on four electric lights. About a half-hour later his father found the lights still burning and young George busily reading *The Buick Bulletin*.

His father asked him why the lavish use of electricity, and the boy countered with, "Papa, I tell you the Buick Motor Company are putting out some strong 'advertise'."

Mr. Brite reports that he turned out the lights himself and helped George to finish the *Bulletin*. After discussing the merits of the Buick car, the young booster wound up the conversation by asking, "Papa, do you reckon our next car will be a Buick?"

A Novel Expedient

FOR originality in the lubrication of motor cars, W. G. McGuffie, of Yakima, Washington, has undoubtedly earned honorable mention in the annals of motorists.

It happened high up in the mountains back of Yakima. He was driving a model 37 Buick and in his own words "she stood up like a lion."

While at his sheep camps in the mountains he killed a lamb and tossed it into his car to carry to his home in the valley. On the way down the mountain side over the roughest kind of roads he hit a rock and tore his oil pump off so that all the cylinder oil trickled freely down the mountain ruts.

His remedy was simple—a piece of cardboard fitted over the place where once there was a pump. Then swiftly he proceeded to fry the tallow of the lamb which fortunately he had along. The first can of tallow he put in was allowed to stand a short time while it hardened and cemented around the hole. Then he poured in three more cans of hot steaming tallow, which saved the day. The fat of a sheep, melted and poured into his gas engine, and the chugging of power was on again.

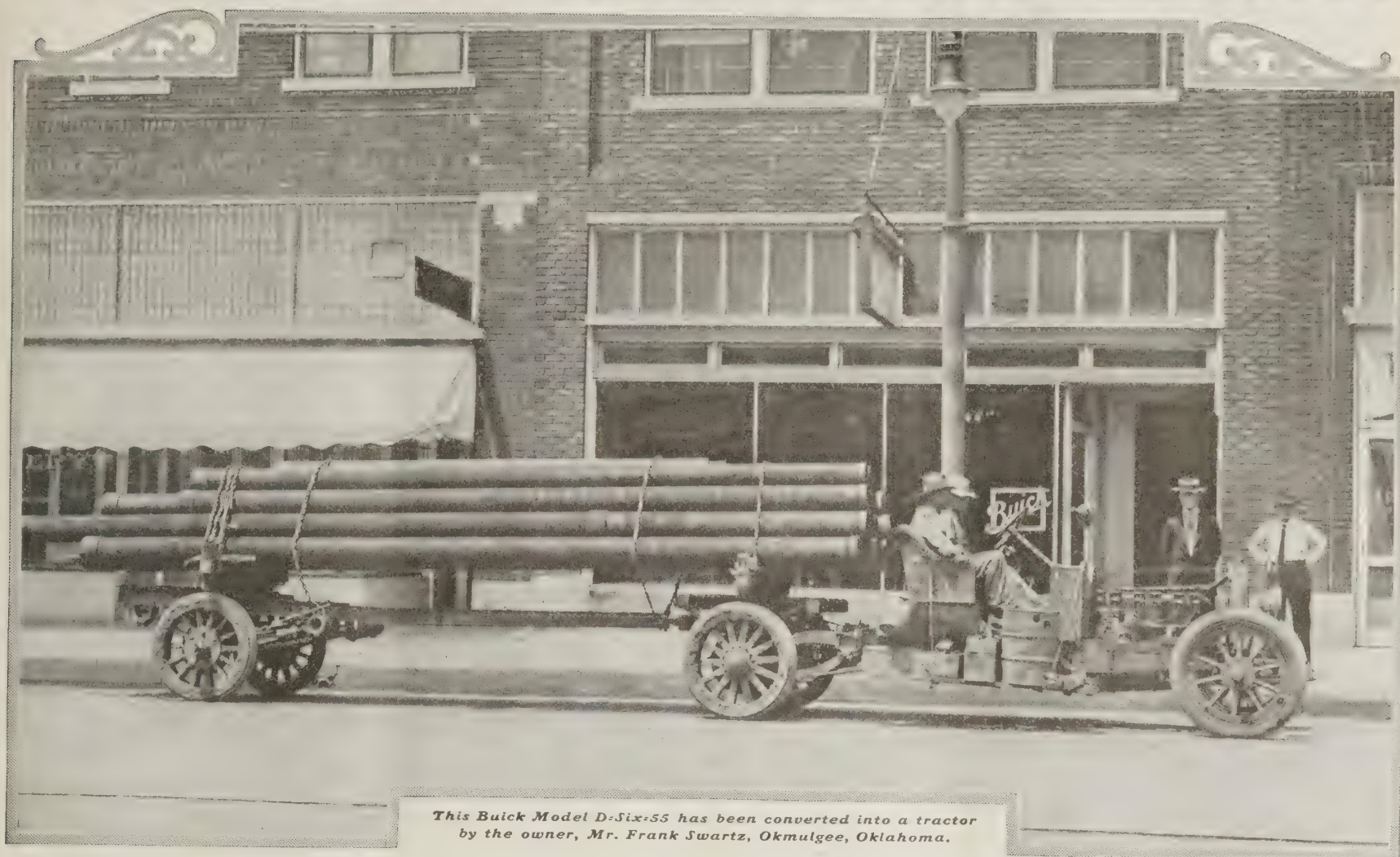
He was again at the wheel and drove his Buick, tallow lubricated, over seventy-five miles of the roughest kind of mountain roads without another mishap.

So far as is known Mr. McGuffie has earned the distinction of being the only man on the face of the earth who has successfully operated a motor car with sheep's tallow.

Makes Farm Work Possible

I OWN several sections of land and have about 400 acres under cultivation, planted in cotton, corn, potatoes, peanuts, etc.," writes G. W. Parker, of Gainesville, Fla. "I use my Buick E-49 to go to and from Gainesville and have a three-quarter ton trailer that I also use in connection with my car to market quite a lot of my crop. My Buick is certainly a time saver and I could not begin to carry on the work on my farm that I do without it."

A Buick Valve-in-Head Tractor



This Buick Model D-Six-55 has been converted into a tractor by the owner, Mr. Frank Swartz, Okmulgee, Oklahoma.

THIS Buick Model D-Six-55 has had an exceedingly trying and varied career, but it is still "carrying on" with apparently undiminished power and vigor.

For two seasons it was used as a touring car in business service in the oil fields near Okmulgee, Oklahoma, and at the end of that time went through a fire. After the fire it was remodeled into a tractor, as shown in the picture above, and has since been used for hauling heavy burdens over considerable distances.

The owner of this Buick car is Mr. Frank Swartz, who is shown at the wheel, about to start on a trip of 24 miles with a load of pipes weighing 11,000 pounds. The hood has been removed from the car, showing the Buick Valve-in-Head motor that successfully and satisfactorily hauls such burdens without trouble.

The conditions of such service are hard. The dead weight behind puts a tremendous load on the engine that never lets up until the destination has been reached. It is like asking a car to continually climb the steepest grade of which it is capable, with every ounce of its power exerted to the utmost all the time.

It not only means power, but tremendous "lugging" qualities at low speed, without the advantage of momentum. Each part of the engine and transmission system is under a steady, relentless strain that the engine in a passenger car never experiences except in rare emergencies.

This tractor affords one of the best possible illustrations of the reserve power and strength of the Buick motor and the Buick car. The only changes made in the equipment are at the rear end, in order to hook it up properly with the trailer unit. Beyond that, the motor, frame and chassis are just as they existed in the original Buick car.

Only an engineer can appreciate the added strain that is put on the various working parts by service of this kind. But anybody can readily see the difference in power required to haul such heavy loads as compared with propelling a medium weight passenger car over average roads and pavements.

Power has always been a distinguishing Buick attribute. Wherever there are hills to climb, deep sand to conquer or heavy mud roads to traverse at certain seasons of the year, there you will find the Buick car remarked for its power, as compared with other cars that do not exhibit the same ability to meet these conditions.

The answer is found in the design and construction of the Buick Valve-in-Head motor.

In discussing internal combustion motors, it is first necessary to get one fact firmly fixed in mind, namely—that they are all heat engines. In other words, they derive their power by converting the fuel used in operating them into heat, and it is the expansion of the heated gases resulting from each explosion in the cylinders that supplies the impulses necessary to run the motors.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be. In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water-jacketed space there is in a motor, the greater the thermal (heat) efficiency will be, because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases both inlet and

exhaust valves form a part of the combustion chamber, where the heat is greatest, and in consequence it is necessary to water-jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. This pocket is water-jacketed. In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water-jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water-jacketed, it follows that the Valve-in-Head type affords the minimum of water-jacketed space that is possible to be secured for any given size of cylinder.

Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water-jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the big valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is more perfect in the Buick motor because the mixture is purer.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other type of motor, a quicker ignition of the charge and a smaller loss of heat through the water-jackets. The sum of these advantages in design is more power with less gasoline consumption.

To these characteristics of design is added in the Buick motor the fruit of nearly twenty years' experience in building Valve-in-Head motors exclusively, and in improving the design consistently every season throughout that period.

A DIXIE HIGHWAY TOUR



NEW highway construction that offers new advantages in the way of both touring and commercial travel, is always of keenest interest to motorists. The conquering of the Cumberlands in Kentucky and Tennessee by means of 300 miles of newly completed road on the Dixie Highway route is best described by the following excerpts from the official report of the Dixie Highway Association:

"Officials of the Dixie Highway Association, together with their guests, have just completed an inspection tour of 300 miles of the Dixie Highway between Cincinnati and Knoxville through the Cumberland mountains of Kentucky and Tennessee. A continued down-pour of rain on many miles of new grade, together with long stretches of first course rock surfacing and almost impassable detours around new bridge construction, made the tour of inspection for the four cars and their occupants probably one of the most strenuous which has ever been attempted by a highway inspection party.

"At a dinner given the tourists by Director A. F. Sanford, of Knoxville, at the end of the tour, the conclusion was reached that the highway will be made usable under all weather conditions within one year. Their conviction is based on the determination of

the state highway departments of Kentucky and Tennessee to co-operate to the fullest extent.

"The tourists started from the Cincinnati Automobile Club Monday morning, led by the official car, a Buick Six, furnished by the Leyman-Buick Company, of Cincinnati, and the tour was concluded at Knoxville Wednesday evening. The cars made 122 miles to Berea the first day. On the second day, the tourists were only able to cover 59 miles from Berea to London on account of the heavy rain, which made the new grades in Rockcastle county extremely difficult. The official car, which led the way, made a perfect score, clearing the

road of tourists and local cars which were stalled in the mud. From London to Knoxville, a distance of 127 miles, was made the last day."

Mr. V. D. L. Robinson, secretary of the Association, in writing of the Buick performance on this trip, says:

"In connection with my work with the Dixie Highway Association for the past four years, I have been on a great many tours and have driven cars over a greater part of the routing of the Dixie Highway, under all sorts of weather and road conditions. I can say to you without flattery that I have never witnessed a better

performance of durability and dependability in a car than made by the Buick on this trip. Seats in the Buick were greatly desired by every member in the party, as they realized the Buick, at least, would get through the heavy, rain-soaked grade.

"Our trip was accompanied by rain all the way, making certain sections of the highway through the mountains, which had been recently graded, seem almost impassable. The Buick made a perfect score. The second day out, when only 59 miles were covered, due to the difficulty of getting the other cars through the mud, the Buick car was waiting over four hours for the other cars to catch up."



Here is a group of the live-wire Montana Buick dealers who attended the annual excursion and convention of the Pence Automobile Company, Minneapolis Buick distributors. They insisted that Montana be distinguished from the rest by a group photograph, with E. T. Strong, general sales manager of the Buick Motor Company, and H. E. Pence, president of the Pence Automobile Company, in the center.

Buick



*A*ppearance has been a big factor in the sale of a vast number of Buick cars—not because it affects the serviceability of the cars, but rather because it supplements that serviceability with a refinement that adds materially to the satisfaction of ownership. Good appearance is highly desirable, no matter what the nature of the service.

Buick beauty is impressive because of its good taste and simplicity. It appeals because it is harmonious in line and in color. It endures because there is nothing freakish about it to grow tiresome.

For these reasons, it logically conforms to the Buick mechanical equipment. Both have been developed by successive stages for many years.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars

BRANCHES IN ALL PRINCIPAL CITIES—DEALERS EVERYWHERE

THE BUICK REAR AXLE

THE Buick rear axle is another mechanical unit that bears the indelible Buick stamp. Because of Buick patents that make it unique in design, manufacture and serviceability, no other automobile company can build an axle like it.

It is of the full floating type, insuring double factors of safety and the maximum of accessibility for adjustment or repair.

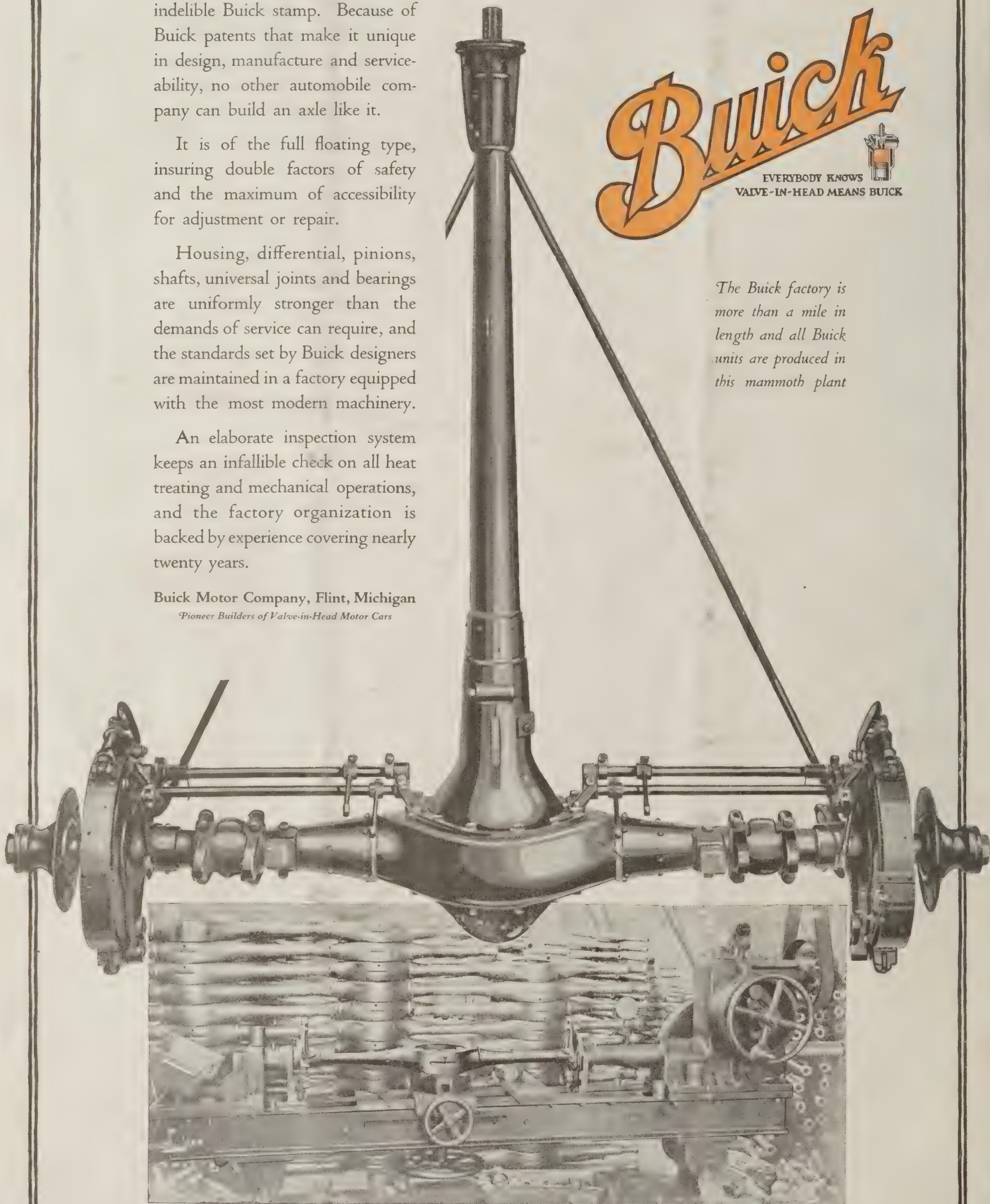
Housing, differential, pinions, shafts, universal joints and bearings are uniformly stronger than the demands of service can require, and the standards set by Buick designers are maintained in a factory equipped with the most modern machinery.

An elaborate inspection system keeps an infallible check on all heat treating and mechanical operations, and the factory organization is backed by experience covering nearly twenty years.

Buick Motor Company, Flint, Michigan
Pioneer Builders of Valve-in-Head Motor Cars



The Buick factory is more than a mile in length and all Buick units are produced in this mammoth plant



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THE *Buick* BULLETIN

Published by the Sales Department
of the Buick Motor Company

NOVEMBER

FIVE CENTS A COPY



In this issue—

The Exclusive Buick Characteristics—Pages 6 and 7



The curfew tolls the knell of parting day,
The lowing herd winds slowly o'er the lea,
The ploughman homeward plods his weary way,
And leaves the world to darkness and to me.

Now fades the glimmering landscape on the sight,
And all the air a solemn stillness holds,
Save where the beetle wheels his droning flight,
And drowsy tinklings lull the distant folds.

—THOMAS GRAY

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Number Eleven

ROMANY BURK

By VANCE PALMER

Illustrations by P. D. JOHNSON

A TROOP of horsemen, five in number, clanked up the mountain track past the little bush school that nestled on the side of the hill. They were big, strapping men with the tan of hot Western suns on their faces and a dare-devil courage in their keen, flashing eyes. Enderby, the youngest of them, lingered a dozen paces behind, his gaze directed to where a pretty, dark-eyed girl was watching them from the school verandah.

"Good luck, Harry," she called out gaily.

He left his companions and spurred his horse over to where she stood.

"I don't like the idea of you being here unprotected, Maisie, now that Romany Burk has taken to the bush again," he said anxiously.

"Do you think I'm frightened of any bushranger in the country?" she asked scornfully. "Besides, I don't believe he's half as black as he's painted."

"Perhaps not," he admitted, "but the sergeant has been hounding him down unmercifully lately, and he's sworn to take revenge on this countryside. You'll be careful, won't you, Maisie; for my sake?"

And, lifting his wide-brimmed hat, with a smile he vanished up the track again.

She listened to the clatter of hoofs die away in the distance, and then tripped in lightly to where a dozen brown-faced bush children were awaiting her.

But that evening, when school had been dismissed for the day and she stood on the verandah ready to go home, there was a trace of uneasiness in her mind. It was three long miles to the mining-camp where she lived, and the track ran over a belt of gloomy ranges. She was not frightened, but as she looked out to where the dusk was creeping stealthily over the bush, all the tales she had heard of the terrible Romany Burk came crowding back to her mind with haunting insistency.

The darkness was falling rapidly, blurring the outlines of the trees. She started to lock the door, when a sound in the room behind her caught her ears. She paused and listened.

"Is anyone there?" she asked with bated breath.

A faint rustling in the corner made her heart throb violently.

"I hope I'm not intruding, miss," came a pleasant voice at length.

She turned round quickly. Screening himself behind a map in the corner was a tall, sunburnt bushman, with a look of awkward confusion on his face. All her fear vanished in a moment. It was on his side that the embarrassment lay.

"How did you come here?" she asked in surprise.

"Through the back window," he stammered. "I thought the place was deserted."

"But why did you come?"

"Listen," he bit his lips, "I will tell you every-

heart was fluttering with excitement, but her face was calm. The sergeant came racing down the track towards her. He was a short, bulky man, with a red, fleshy face and an indefinable touch of the domineering braggart in his manner.

"Did you see a man pass here, Miss Maisie?" he asked her.

"I have seen no one pass except the troopers this morning," she said, not untruthfully.

"That's strange," he fumed, "mighty strange. I made dead certain of coming upon Romany Burk just about here."

"Perhaps he has given you the slip," she said demurely.

She saw his puffy cheeks redden.

"If I meet this man face to face I swear he'll never live to hear the bracelets click on his wrists." He nodded to her curtly, and sent his horse swinging up the rock-streaked track again. When the last echo of ringing hoofs had died away Maisie turned back to the school-room. Romany Burk came forward to meet her, his brown eyes fixed on her face.

"Thank you," he said simply. "It is more—much more—than I had any right to ask."

"I suppose I was really in the wrong in

doing this," she said slowly. "But, somehow, I couldn't act otherwise."

"I hope you will never have cause to repent it," he answered. "As for that sergeant, I have a long account to settle with him, and it will soon be paid."

She saw a fierce light enter his eyes at the mention of the latter's name.

"He was only doing his duty," she said in justification.

"Perhaps so, but in times past he has overstepped the bounds of duty. Listen! A year ago I came upon him dying with thirst on a stretch of barren plain. I gave him the last few drops of water from my own bottle, and looked after him. Then when he had recovered he took me unawares, and slipped the handcuffs on my wrists."

"But you escaped?"

"I did, and I guess he'll have cause to remember it. Tomorrow the gold escort leaves the camp and he will be in charge. We will meet in the ranges at the Nerang Pass—but I've said too much. You will keep it secret?"

He gave her a quick, confident glance, and



"You'll be careful, won't you, Maisie, for my sake?"

thing. I am unarmed, and have been cut off from my gang. Sergeant Conroy, of the Mounted Police, is hot on my tracks. You have me in your power. It is for you to say whether you will give me up or not."

A sound of hoof-beats began to echo out along the track.

"And you want me—"

"You have the choice of remaining silent or telling him where I am in hiding."

The hoof-beats thundered nearer and nearer. Maisie's heart throbbed wildly. The outlaw saw the conflicting emotions struggle in her face and felt that the decision was against him.

"Quick, then!" he said fiercely. "Let me out to meet him in the open. I will not be taken like a rat in a hole."

He brushed swiftly past her; but all her woman's sympathy had been aroused, and she caught at his arm.

"No," she said quickly, "I can't let you be taken like this. Stay here, and I will meet the sergeant."

She watched him slip back into the corner, and then tripped out through the door. Her

before she could answer he had slipped away in the gathering dusk.

Sergeant Conroy, of the State Mounted Police, sat among a pile of papers in the rough log room at the barracks, his coat off and his sleeves rolled up. Outside, the shacks of the little mining camp lay in the shimmering sunlight; a premonition seemed to haunt the sergeant's brain. He looked up to where Enderby was lounging nearby.

"You'll have to go with the gold escort this afternoon, Enderby," he said.

The trooper glanced at him quickly.

"Will the captain allow me to take charge of it in your place?"

"Confound the captain! You'll have to go whether he likes it or not. I'm not well enough to go this week."

Enderby scanned the sergeant's face closely. It was strangely pale, and on it was plainly written that which it is not good to see on the face of a fellow man—the subtle presence of fear.

"Very well, sergeant. When shall I be ready?"

"At once. The escort starts immediately. And mind, Enderby," the sergeant warned, "you've got the savings of fifty miners to guard. Romany Burk will not be the man to lose a chance like this, and if anything happens—well, you alone will be responsible."

Enderby looked him keenly between the eyes.

"I'll do my best," he said quietly. "I guess it won't be my fault if I fail to bring it safely through."

Then he abruptly left the room. The escort was waiting at the bank—a rough, heavy coach, with two troopers on the box. Another trooper reined in his prancing horse near by. Enderby's heart was burning to see Maisie once again before he started. In the wild, rough life he had chosen there was no place for womanish fears, but he knew just to a hair's breadth the peril of taking that little freight of gold across the belt of rock-scarred ranges. Finally he tore a leaf from his notebook, wrote a few lines, and beckoned to a trooper standing idly by.

"You're off duty, aren't you, Fenton?"

"Till tonight."

"Will you do a favor for me and deliver this note? It is only half-an-hour's ride."

The trooper nodded assent, and a moment later the escort swung out with jangling harness and clanking hoofs over the dull stretch of dun-brown plain. The sergeant, watching from a window of the barracks, drew a breath of relief.

It was an hour after that the trooper rode up to the school and delivered the note. There was a smile on his face, for though he was a grey-haired man, the years had not dulled his sense of Love's romance.

Mazie opened it with an eager flutter, quickly scanning the hastily-written lines. The blood left her face, and her lips grew chalk-white. The message brought back to her mind the few words that the outlaw had let drop the night before. They rang in her ears with insistent force. The paper dropped from her fingers, and she gave a little cry.

"Nothing wrong, I hope?" the trooper asked anxiously.

"When did the escort start?" she asked quickly.

"A little more than an hour ago."

"And when will it reach the Nerang Pass?"

He looked at her in surprise, wondering as to the purport of her questioning. "I can't say exactly," he said, "but it's a good thirty miles, and I guess it'll get there about dark."

The blood was pounding in Maisie's ears. She read the deadly significance of it all as plainly as if it were written in an open book. The man she loved was riding into a death-trap with blinded eyes. There could be no mistaking the meaning of the outlaw's words. He had planned to play off his grudge against the sergeant, and with his gang would lie in wait for the latter's approach. In the dusk Enderby would be mistaken for him. There would be an ambush—a short, sharp volley—

keen, roving eyes through the gathering dusk for the first sign of the approaching escort.

Suddenly Romany Burk raised himself from the ground.

"Listen, mates," he said in a whisper. "In five minutes they will be here. I will keep watch at the mouth of the pass. When I fire you will fire." Then his voice changed to one of fierce command: "But if anyone dares to draw his gun before I give the order, I swear he will pay the penalty. Remember there's a fortune for each of us at stake."

He slipped down through the brittle tussock-grass that covered the cliff. At the bottom he threw himself on the turf and listened.

From a great distance the faint clink of shod hoofs upon granite echoed out on the frosty night air. They were drawing near. His breath came quickly, and his fingers tightened on the butt of his revolver. Then a rustling in the bushes behind him made him swing around, his senses strung to concert-pitch. His jaw dropped. Ten paces away a figure on horseback was silhouetted clearly against the sky line.

"The little school teacher, by all that's holy!" he said with a start.

Maisie slipped to the ground, trembling from the fatigue of her ride.

"Surely I am not too late?" she said eagerly. "The escort—has it passed?"

"It is coming now. You'll soon hear the jangling of the chains. But why—"

"You will let it pass unharm-ed?" she pleaded. "For my sake; you will let it pass?"

Her face was upturned to his, and he wrestled with his embarrassment.

"I have made my plans," he said. "I can't alter them now. I have waited long for this settlement with Conroy."

"But he is not there," she said quickly. "The escort is in charge of Trooper Enderby."

He flushed with angry mortification. Once more he had been balked of his object; but still the gold remained for his plunder.

"I am afraid that doesn't make any difference. My gang is set on getting this freight of gold, and this trooper is nothing to me."

"But he is—everything to me," she flushed.

In the twilight she saw the blood spray his cheeks. At that instant the escort loomed up in the dusk before them, swinging

out of the gully below. Enderby sat jauntily in his saddle; the horses rattled past at a slow trot; the two troopers lounged easily on the box. All were supremely unconscious that on the mountain side above them three men had their fingers pressed against their triggers, waiting for a command.

Maisie held her breath, and beside her the outlaw clenched his hands together nervously. One little word from him and there would be a stinging roar, a couple of empty saddles, and a plunging of riderless horses. . . . A tense, agonizing minute passed, and then the girl looked up in relief as the train swept on through the danger-fraught pass and was swallowed up in the cover of the darkness. "They're safe," she breathed.

He looked down into her upturned face.

"Thank God you came," he said softly. "You have saved me from the agony of robbing you of your—life's happiness."

Her brown eyes flashed him a look of gratitude; but there was a sad, wistful smile on his face when a moment later he watched her ride off into the night.



A tense agonizing minute passed, and then the girl looked up in relief

and a boyish figure lying stretched out on the mountain track. . . . A sudden resolve fired Maisie's brain. "Can you lend me a horse?" she asked quickly.

"There is mine," the trooper said in astonishment, "but why—"

"It is important," said she. "I must go at once."

"If I could carry a message?" he suggested.

"No, that is impossible. I must go alone."

And, a few minutes later, balancing herself on the man's saddle with the grace of a born horsewoman, she was racing down the tree-lined track. She had made up her mind. She leaned over the pony's neck, whispering softly in its ears, as the animal plunged off at a maddening gallop.

The Nerang Pass was a narrow seven-foot track between two towering walls of granite. The white road twisted through it like a snake, winding from the gully below to the grey blotch of plain on the other side. At the top of the scarred cliffs that hung over the path four men lay flat on the naked earth, watching with

CURRENT COMMENT

By E. T. STRONG--General Sales Manager

THIS is an era of catch-penny affairs. The market is flooded with schemes and contrivances boldly advertised to change the face of conditions that are supposed to exist. Fraudulent stock issues have to some extent been suppressed. Yet, the ancient gold-brick game exists under a new disguise. A man has but to make something, herald it as a great money-saving device and reap in the profits that come before the public finds that the revolutionary "invention" is worthless.

Automobile owners have not been neglected by these get-rich-quick inventors. Numerous devices and appliances have followed in the wake of successful products in much the same manner that wild-cat mining and oil stock appeared after original enterprises proved profitable. Every attempt is made to place the imitation or appliance in the same class as the product, which with wide distribution apparently offers opportunity for many sales. However, the success of the endeavor depends on the credulity of the prospective buyer and the affair usually disappears in a short time.

The Buick Motor Company has never advised the purchase of devices advertised to work great wonders with the Buick automobile. And at this time we wish to caution Buick owners against the adoption of gold-brick devices intended particularly for Buick cars.

THE only safe procedure to follow in the installation of accessories or devices is to consult the Buick Motor Company, its branches or authorized dealers. We maintain a highly organized Technical Department, the chief purpose of which is to solve the problems and answer the questions that naturally confront the owner from time to time.

This department is constantly in touch with Buick dealers everywhere. We advise every Buick owner to keep in contact with his dealer; especially, to consult him in the matter of equipping Buick cars with extra accessories and appliances.

In the first place, if these devices are not incorporated in the car as it leaves the Buick factory, the owner may be assured that the appliances are, as a rule, of no value in increasing the present Buick performance and durability. And when they are of no value in this regard, the owner is not only encumbering his car but throwing away his money.

The Buick Motor Company, as well as other motor car manufacturers, is constantly in search of devices that will actually improve the quality of its product. As nearly perfect as the Buick Valve-in-Head motor is, thorough research work is constantly being carried on in an effort to find ways of making our motor more powerful, durable and economical.

Not only are our engineers and designers working out improvements of their own, but in our laboratories where every kind of scientific apparatus is available, they are ever busy testing devices and appliances outside interests have submitted to them. In other words, nothing is left undone by Buick engineers that might lead to the manufacture of better motor cars. And in solving problems of motor performance from year to year rests the secret of the Buick success in maintaining the lead each season. Hence—"When Better Automobiles Are Built Buick Will Build Them."

IN this light, it is well to bear in mind that most of the so-called revolutionary affairs on the market have at some time or other been submitted to motor car manufacturers for their consideration. When the new method is found practical and of value, it is purchased from the inventor and is designed to work in harmony with the car as a whole. When it is found without advantage or of no practical value in improving performance, making for more power or comfort, it is discarded. Later, perhaps, it falls into the hands of a promoter and is introduced to the owner as "the most remarkable invention in automotive history," or in similar glowing and meaningless terms.

Briefly, that is the story of the money-saving appliances.

There are accessories which have been found to be of proved value. The electrical starter is an example of this type. Before the particular starter now used on Buick cars was selected many makes were tested out in our laboratories and shops.

WE recognized the improvement a starter would make in car convenience and comfort. Our problem was to adopt one that would work most efficiently with the Buick Valve-in-Head motor. After considerable investigation and exhaustive experiments, a high-grade starter became a standard

part of Buick equipment, being especially constructed to form an integral part of the motor.

And, in the same way, other devices have been designed and built into Buick cars. It is altogether likely that additional features will become a part of the Buick automobile when they satisfy our engineers in point of providing increased power, economy or convenience. It makes little difference whether they are worked out in our laboratories or submitted by outside interests. It is only a question of improvement.

That is the logical principle that governs the development of the Buick Valve-in-Head motor. That is why Buick motors are the best motors we know how to build.

FOR nearly twenty years Buick engineers have concentrated on the Buick Valve-in-Head motor, which has literally performed its way into the lasting favor of owners in all parts of the world. The development of this motor has resulted in a steady increase in Buick popularity among motorists and an equally steady growth of the factory itself. The Buick Motor Company has become recognized as the world's successful builder of the Valve-in-Head motors and motor cars. It is, indeed, a satisfaction to know that more cars each year are going into the hands of former Buick owners who have found by experience that Buicks are constantly approaching the ideal in motor car service.

The loyalty of Buick owners has had its continued effect in not only bringing new owners into the fold, but in making the Buick Motor Company realize the responsibility in maintaining and improving the reputation Buick Valve-in-Head motor cars have established in the motor world.

So, the development work is still going on. With a definite principle—the Buick Valve-in-Head motor—as the central point, the possibilities for improvement are meeting exhaustive study and research. Coming years will no doubt bring improvements as surely as in years past our engineers have found some means each season of making our motor more powerful, durable and economical.

It is with this policy in mind that the Buick owner should understand that the market's offerings of money-saving devices are, in many instances, only on paper.

WHY THE BUICK AUTOMOBILE STANDS ALONE MECHANICALLY

THE Buick Valve-in-Head motor car is individual—individual in design as well as service. Because every important feature in its manufacture is protected by patents, a Buick can be equalled in comfort and safety, performance and durability only by another Buick. And Buicks are manufactured exclusively by the Buick Motor Company, pioneer builders of Valve-in-Head motor cars.

The Buick characteristics are the result of years spent in developing and co-ordinating the essential features that necessarily make the Buick what it is today. All of the principles of correct engineering have been considered. As each step in the constant succession of improvements has been completed, the Buick has naturally become more distinctive.

Details that might be passed over with slight attention have received the thorough investigation of engineers who have been with Buick since the possibilities of the Buick Valve-in-Head motor were first dimly realized.

pany is not merely one of the world's largest and best equipped manufacturers of motor cars. It is the world's successful builder of Valve-in-Head motors and motor cars.

Apparently, the growth of the Buick factory can be attributed to the fact that its product has satisfied owners. The best evidence of this contention is that more Buicks each year are going to former Buick drivers. Season after season, as the Valve-in-Head motor cars are improved and further refined, Buick owners are replacing their older models with new Buicks.

The underlying cause for Buick predominance, however, is indicated in the realization of Buick owners and others that there is no other automobile just like the Buick Valve-in-Head motor car.

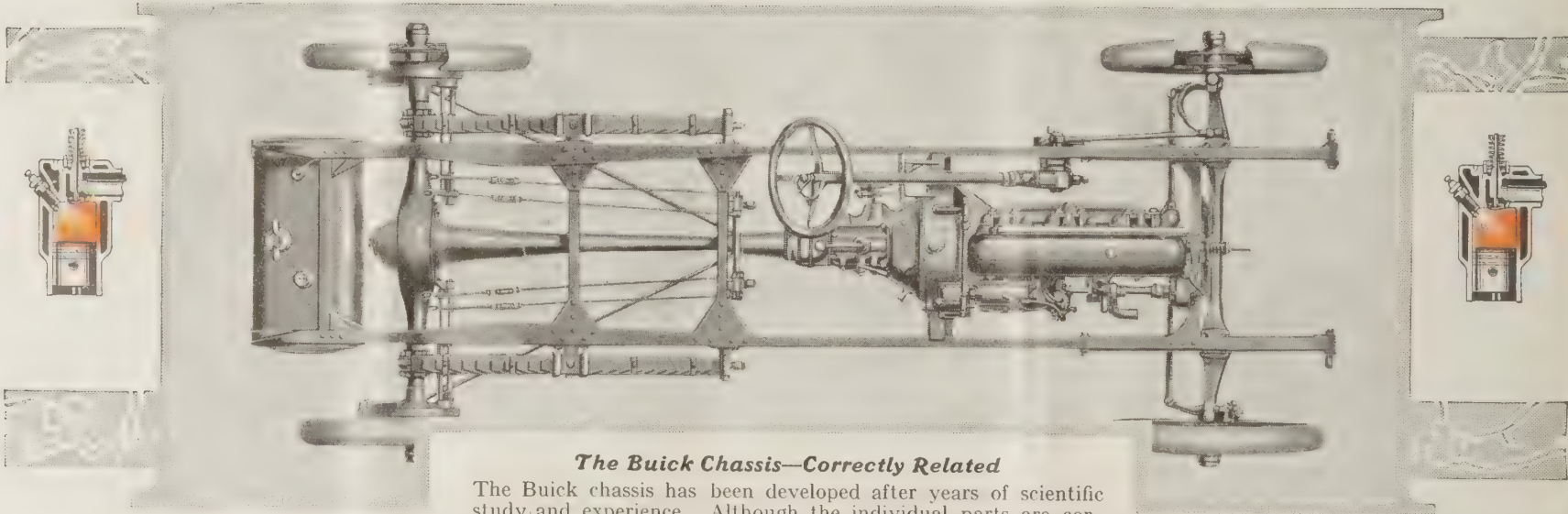
A Buick cannot be matched so much because of the unequalled manufacturing facilities of the Buick Motor Company as because of the exclusiveness maintained by Buick patents,

which have been obtained during the years of Buick development.

A motor car is after all a collection of mechanical units. In the well-engineered car, these units have a distinct relation one to the other. Each part is designed and constructed with the car as a whole the central point.

That is why the individual parts of the Buick reach their highest state of efficiency only when presented in conjunction with the other Buick units. Balance and proportion are reflected in Buick performance and durability.

Because the important features of the chassis, as illustrated on these pages, have resulted from the research and experimental work of Buick engineers, they have become exclusively Buick in design and application. Each development has been backed by a broad experience of the most practical nature. And the only excuse for a change in design or construction has been an improvement in car performance.



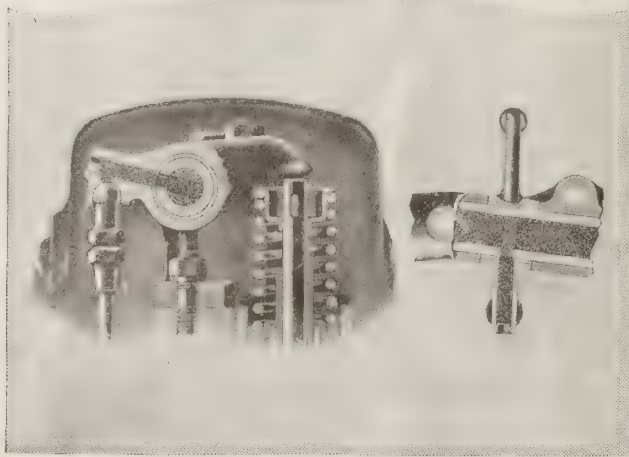
The Buick Chassis—Correctly Related

The Buick chassis has been developed after years of scientific study and experience. Although the individual parts are correctly designed and manufactured, they reach their highest state of efficiency only when presented in conjunction with the other Buick parts. In other words, each part is designed with the complete balance and proportion of the Buick in mind. This absolute harmony and interdependence gives the Buick Valve-in-Head motor car a quality that can be matched only by another Buick.

The motor that proved so reliable in the marine world formed the logical basis for the development work in the automobile field.

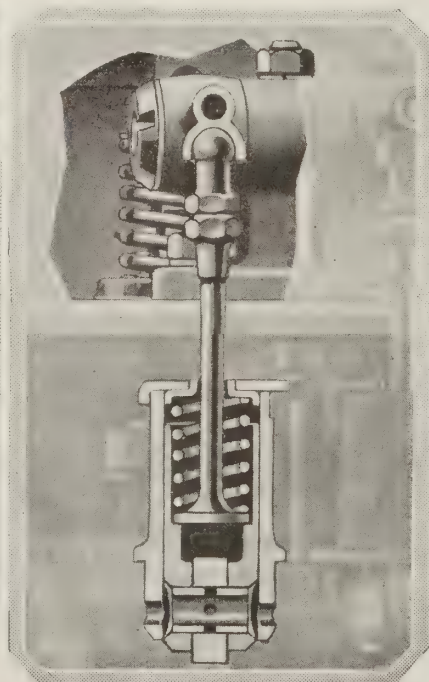
And, as the Buick engineers have continued their experiments and research, the small engineering laboratory in which they first worked has now grown to far greater proportions than those of the whole Buick factory at that time. The Buick Motor Com-

Consider, as an instance, the Buick Valve-in-Head motor. It is available only in a Buick car. The story of this motor is one of the romances of the automobile world. Even now the development work is going on and as it appears in each succeeding model, Buick engineers are satisfied that no other motor of the time can surpass the Buick Valve-in-Head motor in power, economy and all-around



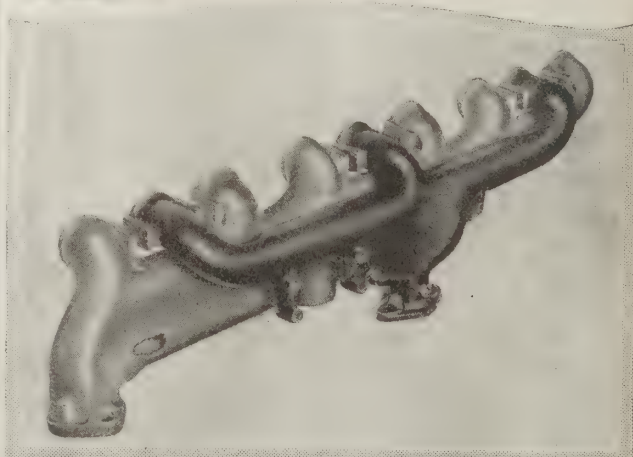
The Automatically Lubricated Rocker Arms

The Buick Valve-in-Head motor is automatically lubricated throughout—a method that insures positive lubrication and consequently less wear on all working parts. The important features of this system are protected by Buick patents. For instance, there is the patented Buick rocker arm construction. The hollow rocker arm shafts on top of the motor contain fibres constantly saturated with oil. By capillary attraction, the oil passes from these fibres to felt packing within the rocker arms and thence to the cups into which the push rods fit, thereby lubricating them. This method eliminates the inconvenience of hand lubrication. It is purely Buick in design.



The Distinctive Valve Springs

The construction of the valve springs on the Buick Valve-in-Head motor is distinctly Buick in design. One spring on the valve stem and another at the bottom of the push rod provide a combination obtained after years of practical experience. The action of the valve is positive. The cam roller rides on the cam continuously, eliminating any possibility of clicking. This exclusive feature, working in conjunction with the other parts, assists in establishing the high efficiency and quietness of the Buick Valve-in-Head motor.



The Buick Twin Manifold

The inlet and exhaust manifolds of Buick design give the Buick Valve-in-Head motor the most even distribution of gas vapor over any length of run and in any temperature. The ingoing mixture is raised to the most efficient temperature and is maintained at that temperature. It does not come in contact with any particular overheated spot in the manifold and thus become too highly expanded to provide the powerful explosion, because the two manifolds are separated by a thin air space which protects, as well as heats, the inlet manifold. This method, therefore, means that the gas vapor is distributed evenly to each of the six cylinders at all times and not merely during the period when motor is warming up.

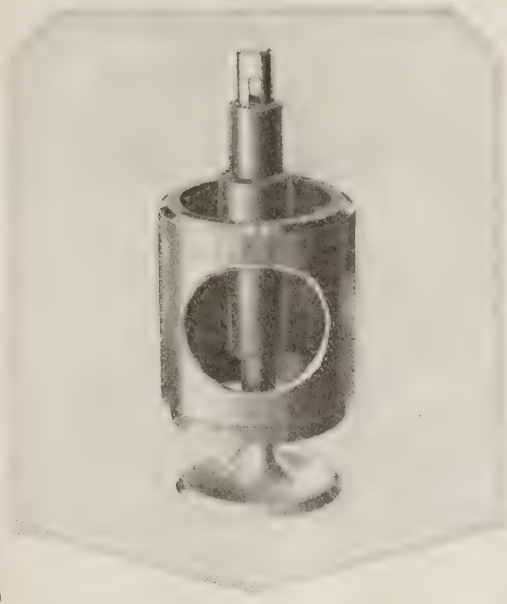


The Simple Buick Gear Shift

The gear shift control, protected by Buick patents, minimizes the effort and skill necessary in gear shifting. No long, awkward moves are required in changing the position of the control lever. In fact, it is possible to shift from one speed to another by holding the hand stationary and slipping the lever in place by the tips of the fingers. And with the easy clutch action, the Buick system of shifting gears is a delight.

The Buick Universal Joint

Another exclusive feature of the Buick is the double-shell universal joint. Being virtually an integral part of the transmission, it is constructed to stand unusual torsional and transverse strains. An additional important factor in its construction is that it works in a bath of oil, automatically supplied from the transmission case. The greater the speed the more oil the universal joint receives. And that



The Buick Patented Valve Cage

One of the striking points about Buick construction is the accessibility of parts. This is illustrated in the Buick patented valve cage. Any particular valve and the cage into which it is fitted can be removed without disturbing the others. This means that should it be necessary to inspect either an inlet or exhaust valve, it may be removed with little trouble or inconvenience. This application of a Buick patent is not only an example of Buick sim-



The Buick Patented Dry Plate Disc Clutch

Under the Buick patented clutch construction, the heavy rotating parts of the clutch are carried by the flywheel and only the very light parts are carried by the transmission, which accounts for the transmission gears not spinning after the clutch is disengaged, thus preventing the clashing of gears in shifting from one speed to another. With its ten friction surfaces it is extremely gentle and positive in engagement. Being a dry plate clutch, it is never necessary to oil it. An accessible adjusting nut makes adjustment of the clutch simple. Although the Buick clutch is positive and non-slipping in action, it is so easily disengaged by a slight pressure of the foot that it is a revelation to drivers everywhere and a contribution to the comfort of the Buick car.

efficiency. They are convinced by the records of the last twenty years that the Valve-in-Head principle is right. And because of their ceaseless efforts in the study and improvement of this type, they are further convinced that the original Buick application of this efficient thermal principle is without equal.

The consistent improvement of the Buick Valve-in-Head motor is typical of the development of other Buick units. A definite plan of design has always been the aim of the engineers. They have concentrated on the production of a car with mechanical units correctly related to the motor.

So, the Buick is wholly Buick. The past work has established it; the future will maintain it.

It is little wonder, then, that Buick owners replace their older models with new Buicks. As evident as the Buick mechanical characteristics may appear to them, there is still another reason why Buicks are distinctive.

In the immense Buick factory, more than a

mile long, there are rows after rows of automatic and semi-automatic machines designed, patented and built especially for the manufacture of Buick automobiles.

These machines not only make possible the quantity production of intricate parts, but enable the Buick to adopt features which otherwise would be prohibitive in a medium price car. Special tools, dies and jigs, designed by Buick engineers and manufactured in the Buick tool plant, also contribute to the technical features of Buick Valve-in-Head motor cars.

The painstaking manufacture of Buick cars is coupled with the engineering skill of Buick designers. Improvements in methods of production have been as highly desirable as improvements in car design. Both are essential to continued success in motor serviceability. The Buick drop forge plant, heat treating department, tool making department, the complete laboratories for chemical, physical and metallurgical work have their important share in making the Buick characteristically Buick.

It is the result of this consistent engineering throughout the entire car that sells the greater number of Buicks. Body lines and finish, as well as the other necessary features of the complete car, naturally appeal to many buyers. The intelligent buyer, however, considers the Buick as a piece of machinery, or, rather, as a collection of mechanical units designed and built to harmonize with one another. He realizes that the Buick standard of today can only be bettered by the Buick standard of tomorrow.

It is this confidence in the Buick Motor Company and the exclusiveness, resulting from nearly twenty years spent in perfecting and co-ordinating the parts of the Buick Valve-in-Head motor car, that send the Buick owner back for another Buick.

The strict adherence to a definite principle of design and the development of that principle along individual lines have earned for the Buick Motor Company the reputation of making a superior product distinctive in construction and service.



The Patented Buick Rear Axle

The Buick rear axle is especially remarkable for its strength. It is of the full floating type, the weight of the car being supported on the sturdy axle housing of special patented construction and not on the live axle shafts. By relieving the driving mechanism of all save driving strains, this system prevents undue wear on the working parts. Characteristically Buick, the rear axle is readily accessible to inspection and attention. It is manufactured by Buick exclusively.



The Special Buick Cantilever Springs

The special rear spring suspension, Buick in design and application, is of the cantilever type. It is particularly noted for its ease of action. Its peculiar construction and drag-like application enable it to gauge its resistance according to the load or shock, lightly oscillating over rough roads and offering gradually increasing resistance the farther the spring is deflected from normal. The Buick design results in greater comfort to occupants and longer life for mechanical parts.

A



The Buick

AS A RESULT of their experience as Buick owners, several hundred thousand people, in all parts of the world, have come to two conclusions with reference to Buick cars:

First, that Buick Valve-in-Head motor cars are so designed and manufactured as to render them capable of great serviceability under a wide range of motoring conditions, and second, that they are backed by a service organization so thoroughly organized as to make that serviceability continuous.

No ridiculous claims have ever been made for Buick cars. They are purchased, rather than sold, on the strength of the record they have made during nearly twenty years.

The mechanical principles of the various chassis units — motor, clutch, transmission and other working parts — have been proven and developed by time and use. And the different body types have been similarly developed to suit the needs of six broad classes of motorists.

The difference between these six models is one of body type or wheelbase, only. Otherwise they are equal — in performance, in power, in well-proportioned strength. These are the qualities that combine to make up Buick in-built serviceability, which makes the need for Buick service facilities the exception, rather than the rule



del K-Six-47 Five-Passenger Sedan

Buick Cars in Varied Service



Here is Mr. E. H. Fielding, of Manhattan, Kansas, who steps from his modern bungalow into his modern motor car every morning and is whisked away to the office. There is some dispute in the family about the real ownership of the car, the young miss at the wheel maintaining that possession is nine points of the law.



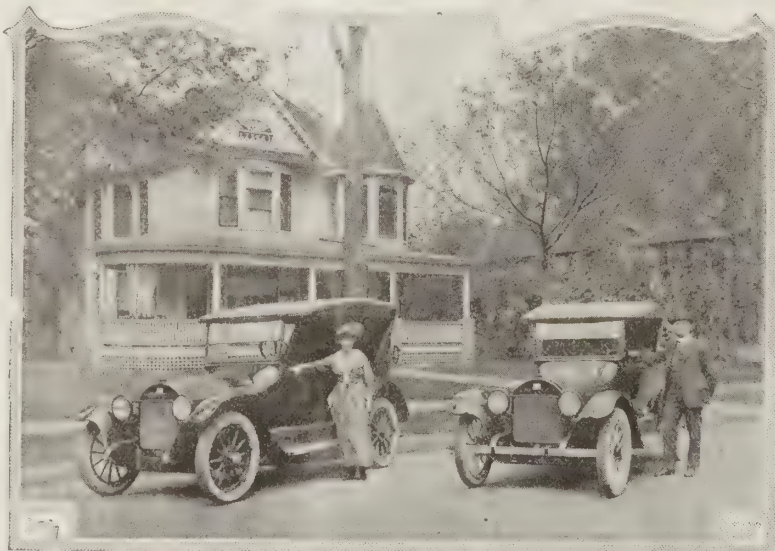
If you want to indulge in the finer things of life, go to Manhattan Kansas, and get in the wholesale seed and grain business. For example, here is Mr. A. P. Fielding, completely surrounded by his two new Buick Valve-in-Head cars, with his beautiful home as a background.



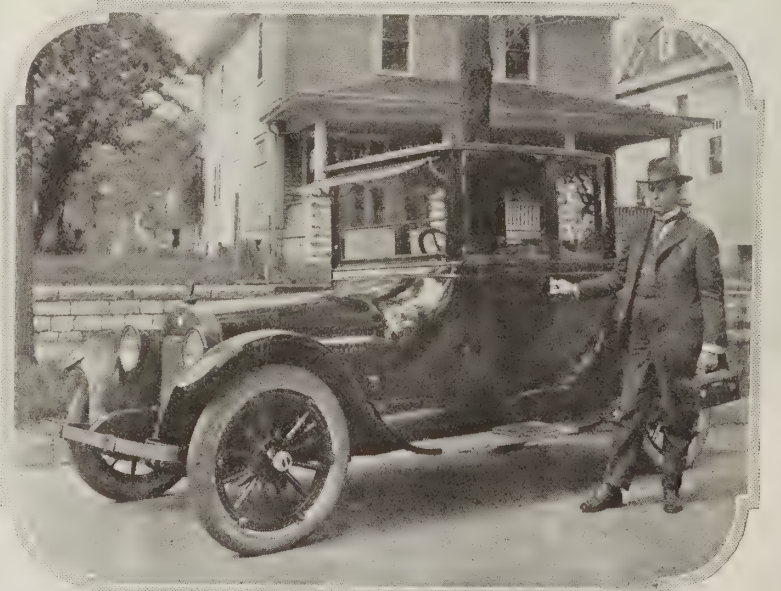
Mr. and Mrs. D. C. Stephenson also hail from Manhattan, Kansas. Each found the Buick so useful that they decided upon one apiece so that neither would be handicapped at any time for lack of quick and reliable transportation. Mrs. Stephenson is a sister of the Fieldings.



The fine Buick service stations are not by any means confined to the large cities, and it is the combination of Buick serviceability with unparalleled Buick service facilities that has developed Buick popularity to its present proportions in all sections of the country. The Ninth Avenue Garage, of Homestead, Pennsylvania, send this photograph of their Buick service car, as an index to the completeness of their service facilities.



Dr. and Mrs. A. H. Bressler, of Manhattan, have owned four Buick cars. Having recommended the Buick to his wife, he proceeded to take his own medicine and says it is very pleasant to take. The Doctor is proud of the snappy, consistent performance of his car, while Mrs. Bressler is delighted with the ease with which she can direct the Valve-in-Head power under the hood.



E. J. Moffitt, M. D., of Manhattan, has filled out several prescriptions for himself, each time for a Valve-in-Head Buick. He finds it a valuable aid in the work of keeping the good folk of Manhattan well, and recommends the Buick to all who need a motor car that is always ready for service.

Prove Versatility and Stamina



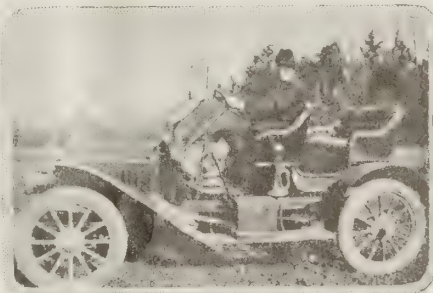
Girardot, Colombia, South America, is the head of navigation of the upper Magdalena, and through the kindness of Mr. George L. Price, of Barranquilla, The Buick Bulletin has been furnished with this photograph showing how Buick cars are transferred from the boat to the train on the last leg of their journey to Bogotá. The rapidly growing Buick export business is largely due to the ability of Buick cars to give hard service without the necessity for constant attention.



To illustrate the possibilities of making a new Buick out of an old one, as touched upon in The October Buick Bulletin, Mr. Roy D. Rogers, of Seattle, sends this photograph of his Model 31, which is now about seven years old. Mr. Rogers has just remodeled the exterior of his car, doing all of the work himself. The car was satisfactory to Mr. Rogers in everything but appearance, and his efforts to modernize that are best appreciated by inspecting the picture.



At the Tacoma speedway, July 4, Captain Eddie Rickenbacker, in company with General W. H. Johnston, W. C. Baldwin and R. A. Mueller, of Tacoma, made an inspection of the track before the races. Captain Rickenbacker, long a friend of the Buick, said: "You have a wonderful car in the Buick. It cannot be beaten as a passenger car and is ready to respond to every need of the motorist at all times."



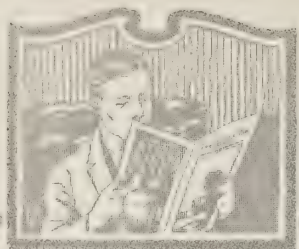
In the spring of 1907 this Buick car became the property of a "medicine man" and was used to distribute panacea for all ills among the good folk throughout the state of Iowa. Later on the car was used as a service car until 1912, when it fell into the hands of its present owner, Mr. S. A. Dillman, of Deerbrook, Wisconsin, who hauls milk and mail in it daily. All definite record of the mileage made by this remarkable car has been lost, but its twelve years of hard service tell a story of quality and stability that could not have been possible without honest materials and skilled workmanship.



Old age usually brings with it a relaxation from strenuous toil. But not so with this Model 17 Buick, the property of Mr. Amole, of Lyons, Kansas. Converted into a tractor, the Buick Valve-in-Head power of this former passenger car is now employed in plowing six hundred acres of land, besides doing all the road work and grading in the vicinity. Mr. Amole says it works fine.

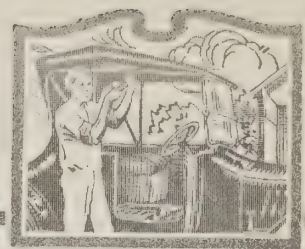


The easy riding qualities resulting from the Buick cantilever spring suspension have been turned to rather a novel use by the Illinois Torpedo Company, of Tulsa, Oklahoma. Power, strength and extreme dependability are the reasons advanced by most business concerns for the adoption of Buick cars for business use, but in this case each of these cars is required to transport 200 quarts of nitro-glycerin each trip. Rough usage would result in a terrific explosion, and Buick cars have been selected for this delicate business largely because of the easy action of the cantilever rear springs.



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Giving the Storage Battery the Care and Attention it Deserves

THE storage battery has been developed to such a high state of perfection that many Buick owners are unconscious of the presence of a battery in their cars. Considering the abuse and neglect that a battery often receives, it is remarkable that it continues to function properly.

When trouble results, it is usually due to the forgetfulness of the driver in attending to the simple things necessary to the life of the battery. Should the owner neglect to keep the motor supplied with sufficient oil, he is not surprised if it fails to run smoothly. He knows that lack of water in the radiator, for instance, means an overheated motor.

And, yet, there are owners who, particularly careful about motor lubrication, abuse their batteries.

Storage batteries, after all, are like human beings. They are chemical—not mechanical. Their elements undergo a constant change. They can suffer from neglect, starvation, overwork, overheating and overfeeding. The crucial period of their lives is in early life.

The storage battery is the heart of the electric system. It is the reservoir into which the electrical energy made by the generator is stored for ignition, lighting and cranking the motor.

And, as its life depends on the care it receives, it should be the duty of every owner to see that his storage battery is in the best of condition at all times. By observing simple rules, he can

assure himself that his battery is serviceable and dependable.

Always keep the battery cells filled with distilled water to a level one-half inch above the top of the plates. Never fill the cells full. Look into all cells frequently, just as you do your radiator. A battery cannot be filled and then expected to function indefinitely without further attention. The filling should be done frequently rather than on specific dates because the evaporation of the liquid is affected both by atmospheric conditions and driving.

Without water the plates become hard and are rapidly overheated by the charging current. Filling the battery too full, however, is as unwarranted as not filling it full enough. Too much water makes the acid overflow and eat away the wood case. Always be sure that the distilled water is pure. Never allow it to come in contact with metal. Distilled water may be obtained at the service station or at any drug store.

It is never necessary to add acid to your battery when it is functioning properly. While discharging, the acid is absorbed by the plates; while recharging forces the acid out of the

plates into the solution again. Only the water is evaporated.

The battery and battery compartment should always be kept clean and dry and the terminals clean, bright and well covered with vaseline to prevent corrosion.

A fully charged battery will not freeze at any ordinary winter temperature, but a discharged battery will freeze at a little below 32° F. Be sure to take hydrometer readings regularly. The gravity should always be up to at least 1.275. If you lay up your car, the battery should be removed and placed in storage, where it may be kept charged.

Another precaution in battery care is to be certain that there are no leaky cells in your battery. When filling, if one cell takes considerable more water than others, this indicates that jar leaks. Unless repaired immediately, the battery may be ruined.

It is advisable to keep in touch with the nearest battery service station. It is naturally to the best interest of the battery manufacturer to see that the battery is working as it should. The service station man will make an examination of the battery and tell you its exact condition. He will explain its relation to the rest of the electrical system and how your driving in summer and winter affects the battery.

You cannot expect too much of him, however, if you neglect to show the respect your battery deserves. Watch the water in your battery as carefully as you do the oil in your engine or the water in your radiator. Attending to the simple things will prevent much inconvenience and trouble later.

If there is any question about the condition of your battery, visit a service station.

When Better Automobiles are Built, Buick Will Build Them

Buick Speaks for Itself

FREQUENTLY I observe statements of Buick owners as to the accomplishments of their cars and it is hard to refrain from telling of my own experiences," writes John Mitchell, of Jersey City.

"After three or four years ownership of another make, which was almost my undoing, I happened to stumble across a 1913 Buick on May 30th of that year. Now this little car traveled all over creation until the fall of 1914. Without any trouble it carried us through the White Mountains and other tours of equal distance throughout the east.

"Two things happened in 1914—one was the announcement of your C-37 and the other was the fact of a man wanting to buy my 1913 model car.

"I have forgotten how many miles I drove this 1913 model; it was about 15,000 miles, and I sold it for a good sum. Fifteen minutes after I sold it I had an order through for a C-37, which was delivered to me the following day.

"I have driven this car continuously. The only expenses I have had to pay were little items—altogether worth the 23,000 miles of service the car has given me.

"Well, I was recently considering the sale of the C-37. I wrote to the party who had purchased my other Buick. He replied that after fine service, he sold it for \$200, and had also bought a C-37. When you consider what I paid for the little 1913 Buick, the service I got out of it and the service it has given its next owner, it speaks for itself.

"My C-37 seems to be so good mechanically, morally and physically, that I have decided to keep it during the 1919 season."

Exceeds Expectations

I HAVE driven my 1917 model Buick Six Roadster constantly," writes Mr. Leon De Bré, of Marshall, Texas, "and I appreciate

its service under ordinary and abnormal conditions to the extent that I would not exchange it for any other car.

"I am now having it thoroughly overhauled, repainted and a new top added, when I believe I will have as good an automobile as I could possibly wish for.

"The Buick has more than fulfilled my expectations in every particular."

No Mechanical Trouble

MR. RAYMOND WARE, secretary of the Thomas-Morse Aircraft Corporation, Ithaca, New York, writes: "I have a Buick Model E-Six-44 Roadster, purchased from Pritchard and Sons. I have driven this car under all conceivable conditions of driving, approximately four thousand miles without any mechanical trouble whatever. The tires are in such condition that I anticipate at least three thousand miles more before it is necessary to replace them.

"The hill climbing ability of this car is a positive revelation to me, and as for speed and riding, nothing more could be desired."

EVERY Buick Valve-in-Head owner is entitled to and will receive prompt and efficient service—the kind that will insure him the uninterrupted use of his investment. No matter where you go, there is a Buick branch or a Buick dealer close at hand prepared to give you intelligent attention.

O. K's the Buick Slogan

AS sales manager for the Sheldon Brick and Building Supply Company," writes Mr. W. E. Simmons, Urbana, Illinois, "I travel over five states, making an average yearly mileage of twenty-five thousand miles. I have been making this territory for the past four years and have driven Buick cars for the past six years.

"I have found that a Buick car will give me more miles for less expense than any other car I have ever driven. I expect to leave for Spokane, Washington, this month in a Model E-44. With this little power plant nothing is impossible in the way of travel. I just received delivery of one of your K-Six-46 closed cars and surely it is the most complete and perfect closed car on the market. When Better Automobiles are Built, Buick will Build Them, is right."

Buick Design and Refinement Show Results

I HAVE owned successively, Buick Models D-Six-45, D-Six-55 and E-Six-47," writes Mr. J. F. Braden, Niagara Falls, New York. "a continuous line of service which I think is hard to equal.

"I have driven my present car about 8,700 miles and must say Buick correctness of design and refinement do certainly show results."

Buick Goes 165,000 Miles as Taxi

WHILE I was in the taxi business in Selma, Alabama, I drove a Buick D-Six-45 165,000 miles in three years and nine months and I was allowed \$850 for it," writes Thomas W. Jones, now of Anniston, Alabama.

"My experience since 1913 in day and night taxi service has convinced me that of the eleven cars I have owned, the Buick is the right car for me."

The Structure of a Motor Car Organization

TOO much mystery has been thrown about the motor car industry. Not enough stress has been laid upon the common-sense fundamentals that have made the building of motor cars one of the foremost industries in America.

As a rule, the purchaser is not vitally interested in knowing very much about these fundamentals. It is enough for him if his car performs satisfactorily and does the things that he, as an owner, expects of it.

Yet these fundamentals, when analyzed, have a definite meaning for him, because they are essential in producing the cars that can give him the results he is after.

For purposes of illustration, the motor car industry may be compared with the building industry, which is divided into three main divisions—design, building and executive.

Design logically comes first. Without the architect's complete plans, the rest of the organization cannot move.

Further, they are powerless to rectify any mistakes or oversights that the architect may be responsible for. Take a house, for example. If the architect does not provide properly for windows, the house will be dark and poorly ventilated. If he does not provide enough closets or does not lay out the rooms in good order, the house will be lacking in comfort and convenience. If he does not specify the right materials the house will be flimsy and in constant need of repair.

In other words, the architect is the moving spirit of the whole organization. And so it is with the motor car designer. It is not going too far to say that the main responsibility for the efficiency and serviceability of a motor car rests with the engineers who design it.

As in the case of the architect, the planning of a motor car is largely a matter of experience. When an architect first designs a building of a certain type, he always finds ways to improve that building after it is finished. The next time he designs such a building, he incorporates these improvements, but still finds things that he wishes he had done, or that his clients would like to have had the benefit of. After a number of years, however, if he is a competent man, he becomes noted for his designs in connection with buildings of certain types, because he has specialized on them and his experience has enabled him to develop his plans to a high degree.

On the other hand, if he is jumping around from one type of building to another, the experience that specialists have gained is to a great extent lost to him. He finds that he cannot design churches, schools, factories and houses and be a striking success in all these lines.

Nearly twenty years ago, Walter L. Marr and E. A. DeWaters worked together on the Buick Valve-in-Head motor. They have been working on new models every season since—always of the Valve-in-Head type. Each season they have found ways in which to improve those cars and make them better than their predecessors. There has been nothing spectacular about these improvements, any more than the addition of a sleeping porch or French doors are spectacular in a residence. But the improvements are there and make the cars better cars to own, just as the house mentioned is a more attractive and more desirable house to live in.

In number, these improvements have been many, so that the Buick cars of today have little in common with the first Buick car except the Valve-in-Head principle of motor design.

And it is the sum of these improvements that marks the Buick car as an individual product. Practically every part, big or little, that goes into the makeup of this car is as distinctively Buick as if the name were stamped into it. The motor, for example, does not look like any other motor, nor does any other motor perform just like it, because the relation of the parts is so perfectly adjusted through these years of patient study and development that apparently small differences from other makers' products make a big difference in actual service. And it should be noted that the designing of all of these parts is done in the engineering department of the Buick Motor Company, by the same men who have designed all previous Buick models.

Next in importance to the engineering department is the factory organization, and because of its immense size it must be considered as an organization rather than as the triumph

All of these production methods have been reduced to an exact science, so that each man has his individual operations to perform and to become expert in performing. This makes the system automatic as far as current production is concerned, but the various departments are in charge of men who are experts in their respective lines and who are continually conducting research work, in conjunction with the engineering department, for evolving still better methods and still better machinery. This work is entirely separate from current production and does not interfere with it in any way, the results obtained being applied to manufacture only when they have been perfected.

So the production work on motor cars corresponds to the actual building operations of a large contractor. The engineering department specifies the design and the material to be used, and the method of manufacture is largely one of routine, based on thoroughly proven principles applied to reproducing the individual parts in quantities. The workmen are trained to become expert on each particular class of work, and the building up of the personnel of each department has also been a matter of years.

The executive departments are also divided and subdivided, as is necessary in an institution of this size. The chief duties of the executives are the selection of big men to fill the more important positions throughout the factory, to decide on policies in reference to the manufacture and sale of the cars, the arrangements for finance, etc. They are not active in either the designing or building of the cars, but delegate this work to men who are specialists in their respective lines.

All three of these divisions are necessary in the building of motor cars. The one would be useless without the other. But the fact remains that the fountain-head of quality in the motor car is the engineering department, which has entire supervision over both design and materials.

Viewed in this light, the engineering department is the most important of the three, because it makes possible the existence of the product upon which the success of the business is built.

The unity of the Buick engineering department is therefore a source of great gratification to the Buick Motor Company. Mr. Marr and Mr. DeWaters, together with some of their assistants, have been with the Buick Motor Company ever since the first Buick car was designed, and while the engineering department has been increased greatly in size and equipment, these two men have never ceased to actively guide the designing of all new Buick models.

Their work is not hampered by either the executive or manufacturing divisions. On the contrary, they have been given every co-operation at all times by both of these divisions, with free rein to apply their long experience to the improvement of Buick cars.

There have been changes in both of the other divisions. This is quite natural in so large an institution, but because of the manner in which the authority is divided in these two divisions, the changes have had no perceptible effect on the product or the business. The quality of Buick cars continues to improve each season, not because of the activities of any single individual, but because all departments work together harmoniously in getting the utmost out of the most priceless Buick asset—which is nearly twenty years' experience in designing and building Buick Valve-in-Head motor cars.



of just a few individuals. No one man could possibly have directed the development of the Buick factory organization. It is so highly specialized in every department that a vast number of really big men have been required to make it what it is today.

The factory organization has one thing in common with the engineering department, namely, that it is a development. But this development also differs from that of the engineering department in that the past few years have contributed most to it. The reason for this is that Buick production has increased so immensely, particularly during the past four or five years, that it has been possible to make greater strides each season in the handling of each individual operation. Machinery has been bought that increases the quality of the parts at the same time that it reduces their manufacturing cost, but this machinery is so expensive that it would have been prohibitive if it were not for the big volume production.

And it is this same volume production that has accelerated the installation of the Buick straight-line production system, with its countless short-cuts and methods.

*When better automobiles
are built,
Buick will build them*

Transportation and Power



The sales room of the James Levy Motors Company, Buick dealers at Twenty-third Street and Michigan Avenue, Chicago. The interesting display of airplanes marks the sale of airplanes for private use through automobile dealers. Buick salesmen are especially qualified to handle the time-saving machines because of their thorough familiarity with the Valve-in-Head motor, which is the basic type of motor used in airplanes

IN Chicago there are a few business men who live in one of Chicago's residence suburbs, and who have purchased a hydroairplane in which they are daily transported to and from business, landing on the smooth waters of the lake front within a few minute's walk of their respective places of business.

And in the business sections of cities all over the country are to be found on display, airplanes of various makes, designed for private use.

It is the old, old story of transportation—the constant reaching out for more speed.

Just when the airplane will reach the point striven for by its designers is difficult to say. In the meantime, its introduction has been undertaken by those men whose past experience best qualifies them to handle a product of intricate mechanical makeup—the motor car dealers.

Like the motor car, the most important unit in the airplane is the motor. As a matter of fact, the safety of operation of an airplane depends to a far greater extent upon the motor than in any other type of conveyance. Power—and sustained power—is essential to keep the 'plane in flight, and power in relation to weight is vital in the flexibility and efficiency of the 'plane's performance.

For this reason, Valve-in-Head motors are used in airplanes—not as the result of chance, but because it is a universally established fact that this design gives more power and efficiency than any other known type. The Liberty motor, which embodies the combined experience and knowledge of many of America's foremost motor designers, is also of the Valve-in-Head type and has excited the wonder and admiration of the whole world with its power in relation to weight, its endurance and its reliability. The engineers who worked on this motor were familiar with practically every known type, as were the European engineers who designed the various European airplane engines. Yet they are all in accord on the matter of basic design and the engines used are of the Valve-in-Head type.

There are still other reasons why the Valve-in-Head motor is the ideal type for motor car

use. Not only do its power and light weight give the type of performance that is usually summed up by the word "snappy," but the design of the engine makes possible an efficiency and economy in gasoline consumption that cannot be duplicated by other known types.

In discussing internal combustion motors, it is first necessary to get firmly fixed in mind that they are all heat engines.

So, as far as the motor is concerned, a gallon of gasoline represents so many heat units, and the greater the percentage of these heat units that can be converted into actual working power, the greater the efficiency—or economy—of the motor will be.

In engineering terms, this principle is known as thermal efficiency.

Unfortunately, it is impracticable to use all of the heat generated in such a motor for power, because unless some means of cooling the motor is used the heat soon becomes so great as to be destructive.

So, in making the cylinder castings, water passages are cast around the cylinders in such a manner as to allow the excess heat to escape through the cylinder walls into the water, which in turn is cooled by the radiator on the front of the car.

It is quite evident, therefore, that the less water jacketed space there is in a motor, the greater the thermal (heat) efficiency will be because a smaller area of the cylinder walls and combustion chamber will be exposed to the cooling influence of the water.

This brings us to the biggest reason for the Valve-in-Head design, because the arrangement of the valves permits of a smaller, more compact combustion chamber than is possible in either the L-head or T-head type.

To make this statement still clearer, it should be understood that in all cases, both inlet and exhaust valves form a part of the combustion chamber, where the heat is greatest, and in consequence it is necessary to water jacket the valve chambers as well as the tops and sides of the cylinders.

In the L-head motor there is a large pocket on the side of each cylinder in which the valves are located. This pocket is water jacketed.

In the T-head motor, there is a pocket on each side of the cylinder, one containing the inlet valve and the other the exhaust valve. These pockets also are water jacketed.

In the Valve-in-Head motor there is just a plain, unbroken cylinder, with the valves located in the head of the cylinder. And as this space is already water jacketed, it follows that the Valve-in-Head type affords the minimum of water jacketed space that is possible to be secured for any given size of cylinder.

Now, if we regard our gasoline as so many heat units, it is quite apparent that the less of these heat units that are wasted through the water jacketed surfaces, the more of them will be left in the form of actual, usable power directed against the pistons.

Then, because the large valves in the Buick Valve-in-Head motor are located in a straight line above the pistons, the dead exhaust gases are quickly and easily expelled through them at the conclusion of the working stroke, instead of being forced around corners and downward through a much larger chamber, as in the L-head and T-head types. And the combustion during each working stroke is much more perfect in the Buick motor because the incoming charges are purer.

The net results of these main characteristics of design are to give the Buick Valve-in-Head motor more perfect combustion than other types of motors, a quicker ignition of the charge and a smaller loss of heat through the water jackets. The sum of these advantages is more power with less gasoline consumption.

*Everybody knows
Valve-in-Head
means Buick*

Buick



THE development in open car design to meet all sorts of weather conditions is strikingly illustrated in all three of the Buick open cars.

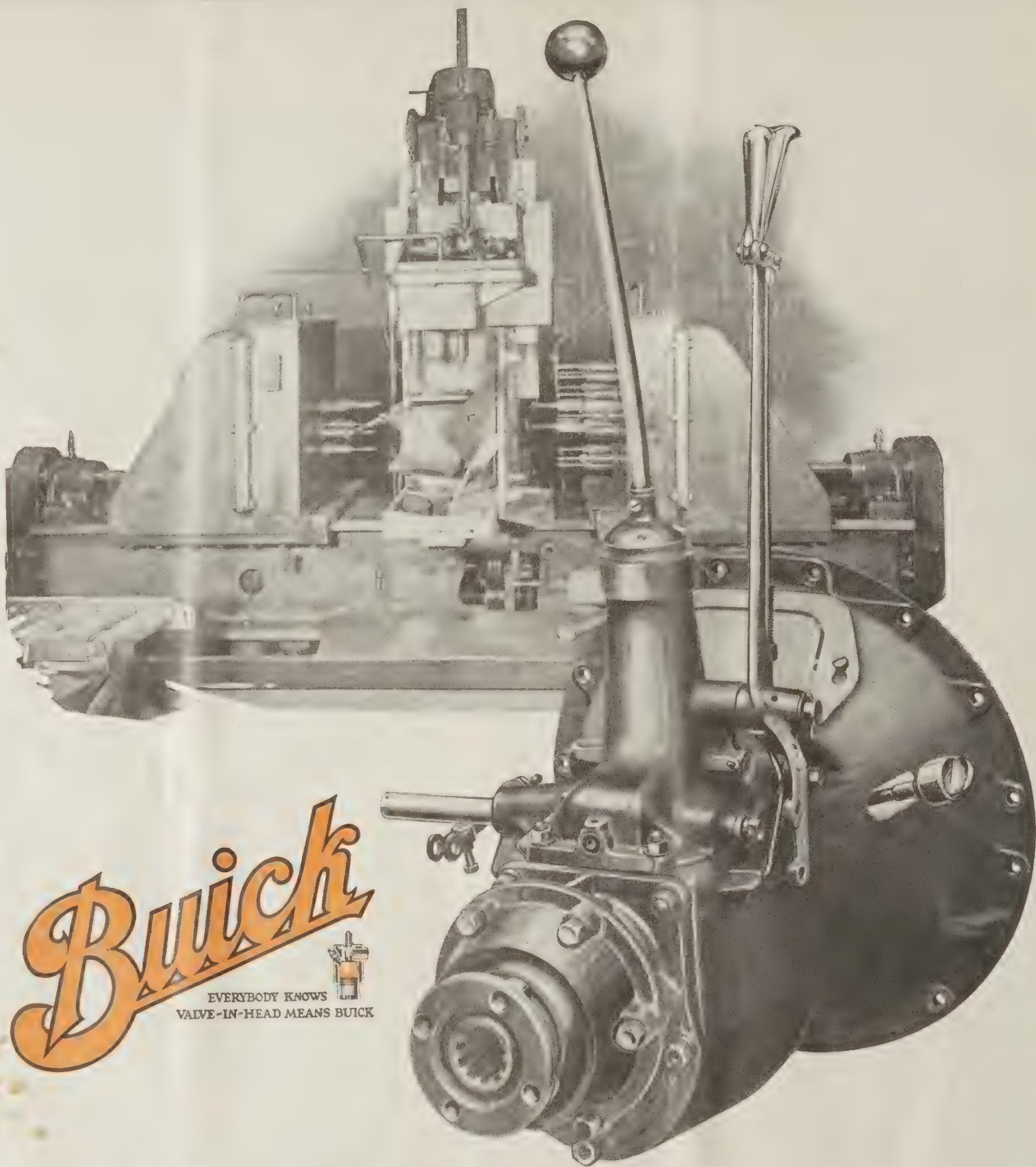
A handsome, weatherproof top of heavy material—side curtains that lap to shut out drafts, yet open conveniently with the doors—a visor from top to windshield to keep out wind and

rain—a windshield that is rain-proof—generous windows that afford perfect vision in all directions—a wide latitude in adjusting all of these conveniences, quickly—give the owner of a Buick open car an equipage that is only excelled for year-'round use by one of the more expensive Buick closed cars.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Branches in all Principal Cities—Dealers Everywhere

Pioneer Builders of Valve-in-Head Motor Cars



The Buick Transmission

THE Buick transmission is as individually Buick as the Buick Valve-in-Head motor. No other transmission is just like it, and no other transmission could give as satisfactory results in the Buick car.

Like all other Buick units, this transmission derives its quality from distinctive features of design, coupled with painstaking care in manufacture and the selection of materials.

Each gear and shaft in the transmission is forged under Buick hammers, from dies made in the Buick die department, machined, heat treated and inspected in the Buick transmission factory. The case, from

casting to machining, is made in the Buick plant. A very unusual feature is the universal joint, which is incorporated as an integral part of the transmission, automatically lubricated from the transmission case. Its double shell construction adds greatly to its strength and wearing qualities.

The gear shifting fork is of special construction, requiring only the slightest movement of the lever to shift the gears.

In ease of operation and in ability to stand up under hard service, the Buick transmission is a worthy auxiliary to the Buick Valve-in-Head motor.

The Buick factory is more than a mile in length and all Buick units are produced in this mammoth plant

Buick Motor Company, Flint, Michigan

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities—Dealers Everywhere

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THE *Buick* BULLETIN

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In this number—Where to Get Buick Service—By E. T. STRONG. How Buick Is Building Five Hundred Cars a Day. Christmas Dresses—By ANNE EMERSON



On Going Home for Christmas



He little knew the sorrow that was in his vacant chair;

He never guessed they'd miss him, or he'd surely have been there;

He couldn't see his mother or the lump that filled her throat,

Or the tears that started falling as she read his hasty note,

And he couldn't see his father, sitting sorrowful and dumb,

Or he never would have written that he thought he couldn't come.

He little knew the gladness that his presence would have made,
And the joy it would have given, or he never would have stayed.

He didn't know how hungry had the little mother grown

Once again to see her baby and to claim him for her own.

He didn't guess the meaning of his visit Christmas Day

Or he never would have written that he couldn't get away.

He couldn't see the fading of the cheeks that once were pink,

And the silver in the tresses; and he didn't stop to think

How the years are passing swiftly, and next Christmas it might be

There would be no home to visit and no mother dear to see.

He didn't think about it--I'll not say he didn't care.

He was heedless and forgetful or he'd surely have been there.

Are you going home for Christmas? Have you written you'll be there?

Going home to kiss the mother and to show her that you care?

Going home to greet the father in a way to make him glad?

If you're not I hope there'll never come a time you'll wish you had.

Just sit down and write a letter--it will make their heart strings hum

With a tune of perfect gladness--if you'll tell them that you'll come.

—Edgar Guest

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Number Twelve

THE CHRISTMAS DRESSES

BESS stopped on the threshold and stood looking at her mother as if she could hardly believe that she was not seeing some vision in a dream. The mother she had left was a drab little creature, her hair pulled tight and clothed in simple, old fashioned garments. But the little woman standing by the window was fashionably clad. Her dress was of soft grey silk with a girdle of blue and the white lace collar seemed to reach up and touch the silvery white hair piled on the top of Mrs. Hendricks' head.

"Mother, dear," she said softly, and there were tears and a laugh fighting for supremacy in her tone. Her mother turned quickly, and the two met in the center of the room.

"My dear, my Bess" the older woman crooned, much in the same tone that she had sung the lullabies that had soothed her baby of over twenty years before, and she kissed her daughter whom she had not seen for two years. When the first moment of greeting was over she stood the girl off at arm's length and looked at her critically. Bess had changed during the years that she had been away in the city.

All the little rough edges had gone, and there was a stamp of success on her—on her well cut clothes, her fine furs, and on her exquisitely chiseled features.

"You're looking good, dear," Mrs. Hendricks said after she had finished her survey. "The city has done you no harm."

"No mother, it has made me, and I am so happy." She hesitated a moment. "But mother—you—you are too wonderful to be real."

The older woman laughed a bubbling laugh, and looked down at her silk dress.

"I couldn't shame you when you were bringing such a grand man home to us."

Bess started to tell her mother that shame was impossible, but her father and Cutting came stamping up on the broad porch and they went to the door to meet the two men.

"Hasn't she grown to some lass," her father

By ANNE EMERSON

said boisterously, pinching her cheeks. "And see mother, this is Mr. Cutting. I hope you'll think Bess picked well, for I do," and he laughed at the expense of the lovers.

When Cutting had taken off his great coat, Mrs. Hendricks led the way to the rooms that

tor and there were few girls who were as fortunate as she; for Cutting had helped her socially as well as in her business. His sister had called on her, advised her what to do about her home, her clothes, until gradually Bess had lost all the marks of her country breeding. She was not ashamed of her parents, and the big well-kept farm house was perfect in every detail,

from the model stock barns to the fine, old furniture in the living room and the modern conveniences that had been installed one by one as her father heard of them.

But Maynard was the member of a fashionable family and the people whom he had always known were on a different plane from her own humble parents. She had been more afraid of her mother than her father, for she was old fashioned in many respects, and there had been several times when she was at the point of writing her mother and suggesting that she try to smarten herself and have some new clothes made by the village dressmaker.

Bess had not followed her inclination—she had put it aside as a thought to be ashamed of—and yet her mother was dressed in clothes that she hardly believed possible could be procured in Oak Ridge.

Presently Bess got up and went downstairs. There was a delightful odor of biscuits and spice bread coming from the kitchen, and she went in that direction. To her surprise Maynard was standing before the fire asking questions about how the food was prepared and what the different household appliances were for.

"Why, Maynard!" she exclaimed, "Whoever thought of bringing you to the kitchen?"

"I brought myself," he told her promptly. "I've never had a chance to get into a real kitchen before, and as I heard mother talking out here I just walked in. Tell me, what do you use this for," and he pointed to a double boiler that stood on one side of the stove.

Mrs. Hendricks told him. She was delighted with the son that Bess had brought her, for there was something so real about him, and



"That night about the supper table the laughter rang till the house resounded with the noise"

something so wonderful in the way which he had called her mother that her heart went out to him at once. She had never had a son, and with a little inward prayer she thanked her God that Bess had brought home a man who was worthy of his sex.

That night about the supper table the laughter rang till the house resounded with the noise. Not since the days when Bess had had her children parties could Mrs. Hendricks remember having heard such a noise as when the two men, like two boys just from school, shouted at their own jokes. After they were all in bed and the stillness of sleep covered the place like a soft, soothing blanket, Mrs. Hendricks lay thinking that never since the time that they had first laid Bess in her waiting arms had she been so happy.

Christmas Eve was a busy day for all of them. There were packages to be made for friends in the village, last minute necessities to be brought from the store, and several times during the day school girl friends of Bess called at the house, bashfully eager to see her and the man she was to marry.

That afternoon Maynard and her father went across the country to deliver some gifts and Bess threw herself down on her bed to dream of the wonder of it all. For some short time she slept, and then she started up guiltily for she felt there must be work for her to do.

She went to her mother's room, but she was not there. Instead, over the back of a chair was laid a dress that Bess had never seen before, and by the side were a pair of small shoes. The dress was of dark goods and Bess held it up to look at it closer. She fingered the buttons of cut steel and the soft lace that fell as a shower from the throat. Bess put down the garment and picked up the shoes. They seemed ridiculously small and she wondered if her mother could possibly wear them with any degree of comfort. She went to the cupboard and found one of her mother's old shoes. The slippers were cruelly tiny in comparison.

For several minutes she stood looking at the two shoes that she held. Her mother was making herself uncomfortable—perhaps actually suffering—so that her daughter need not be ashamed of her. Her mother was sacrificing herself so that she, Bess, might gain greater favor in the eyes of the man she loved. With clenched hands Bess tried to think if ever by word in her letters home she had been the cause of her mother's actions. Had she unconsciously spoken the secret she was ashamed of and tried to hide even from herself? For many minutes she puzzled over it. She was not ashamed of her mother—she was proud of her—and she felt that she could more easily give up the man she loved than see her mother dressed in the unusual, and she feared uncomfortable, clothes.

She put the footwear back in the places where she had found them, and started downstairs. Her mother was in the kitchen, just in the act of stuffing the big turkey.

"Why, dearie, I thought that you were asleep. I've just about finished here, and then I'll hurry and change back to one of my good dresses. I can slip up the back way if they come in before I get finished."

Bess looked at the small squat figure, the plain dress of blue galatea, the broad low slippers, and the hair, parted in the middle and drawn low over her forehead.

"Mother, dear—you know—" she started and then stopped.

"Well, dear?" Mrs. Hendricks asked, pausing in her work to look at her daughter.

"Mother, why did you do it?"

"Mercy! Do what? What's happened?" There was genuine surprise in her tone.

"Why did you get those clothes, mother? And those shoes that can't possibly be comfortable?"

Mrs. Hendricks wiped her hands on her apron.

"Bess, you didn't for a minute think that I was going to let you bring home a fine man like Maynard and then have to be ashamed of your mother, did you?"

A quick stab of pain went through Bess' heart. That had been her own fear, but now she was fighting back the tears when she remembered that she even for a second had been guilty of such a thought.



"She crossed the room and stood beside her mother—her head held at a defiant angle"

"Mother, how could you?" she cried.

"It isn't a matter of how could I—I just did. I know you never thought of such a thing, but I got the clothes just the same and for two weeks we all worked as hard as if it was harvesting time to get ourselves into shape."

The girl looked at her mother, and then down at the floor.

"I did think of it, mother, I thought I would ask you to get some new clothes," she said slowly, "but I would never have spoken of it—because dear—after all, you're my mother, and I would be proud of you and love you no matter what you looked like."

Mrs. Hendricks sighed.

"Yes, dear. Now suppose that you go in the front room and start putting up some of that holly. I've got to finish up here, for they won't be gone much longer."

Before either of them could say more, a call from the front part of the house reached their ears and almost immediately Maynard came into the room. He had a great bunch of evergreen in his arms, and he dropped it to the floor.

"See what we found—it will make the best kind of hangings for the hall, and it won't take an hour to make it up into wreaths."

Mrs. Hendricks turned her back, and Bess

could see the frown on her face. Bess herself was angry that he had arrived before he was expected.

Maynard saw the frown and turned to Bess.

"What's the matter, puss?" You and mother been quarreling? Looks that way."

"No, we haven't been quarreling," the girl told him deliberately, "I have just been asking mother questions and been taking up her time."

Maynard bent over the evergreen and started to break off the smaller branches. Bess went and stood beside him.

"Maynard, dear, I want to tell you something, and that is we are very plain people, people who have always lived in the country, and our ways and our clothes are simple."

"It's about mother," she went on. "Mother is cross that you found her here in the kitchen dressed in her old clothes. You've never seen her like this before, but this is the way she belongs—in striped galatea, wearing broadtoed slippers—but being comfortable. Her best dress has always been black silk, cut in the fashion of years ago. And I'm not ashamed of her, Maynard—I love her—she is herself when she looks like this, my own, dear mother."

As if to show that she was heart earnest in championing her cause, she crossed the room and stood beside her mother—her head held at a defiant angle.

Maynard was speechless.

"Ashamed of her?" he asked slowly.

"Why, Bess—you—don't think—that I'd be ashamed of her!"

He broke off into a fit of laughter in which Mrs. Hendricks seemed to join.

"Bess, let me tell you a secret. At half past six this morning mother and I had a cup of coffee right here in the kitchen and she was dressed much as she is now. We had a wonderful talk and she told me all about the work she did here on the farm when you were small. Please, dear, don't let me think that you imagined that I was such a cad as to let clothes make a difference?"

Bess bit her lips. She knew that she had earned the rebuke.

"And, dear, it wouldn't make any difference if mother never wore anything but calico. We'd still be proud of her, wouldn't we?"

There was a minute of silence, and then Maynard went on arranging the evergreens. Bess watched his long, white fingers and presently went to help him. Unnoticed, Mrs. Hendricks slipped from the room by way of the back stairway.

For an hour the two worked, forgetting all else as the minutes passed save the fact that they loved, and that the Christmas cheer was in their hearts. When the strings of evergreens were finished they went to decorate the living room.

A great happiness had come over Bess—a sense of things well done. She was glad she had spoken for she saw her lover as a man capable of being loving and gracious to the poor and humble as well as to those of his own class. As they worked the smell of the supper came faintly to them and Bess heard her mother come down the stairs. Mrs. Hendricks peered in the door at them, then without saying a word hurried away towards the dining room.

"Mother has dressed herself up in those uncomfortable clothes after all," she told Maynard.

From the top of the step ladder Cutting looked down on her and laughed.

"I rather thought she would," he said decisively. "She told me this morning that she was very glad that you brought me home with you. She's been wanting an excuse to get some fashionable clothes for years but didn't feel she ought without an excuse. Those dresses are her Christmas presents to herself."

CURRENT COMMENT

By E. T. STRONG—General Sales Manager

WHEN a manufacturer installs a series of automatic machines in his factory, he generally has one idea in mind and that is to increase the efficiency of his production. If by chance one of these machines should show signs of trouble, it is quite unlikely that the manufacturer would call in the plant blacksmith to discover the source of difficulty. Logically, he would send for a representative of the designer or maker of the machine, because he would want to make sure that the machine was correctly repaired so that it would work again in harmony with the others in the series.

A similar line of thought arises in connection with motor cars. As was illustrated in the July issue of *The Buick Bulletin*, the owner knows that the thing to do when anything happens to a piece of mechanism is to restore it as nearly as possible to its original condition so that it may continue to be correctly related to the other parts with which it works in conjunction. The problem no longer confronts the owner in such cases as how to decide who should be called upon for assistance. Manufacturers of standing offer a service in connection with their product that answers the question for owners.

The owner really interested in the successful performance of his motor car naturally sees that the manufacturer's representatives are in the best position to carry out such service, but whenever a product secures wide distribution, there are individuals who claim for their service, as well as their repair parts, the distinction of being "just as good."

IT WAS not so many years ago that the manufacturer of an automobile was contented to call the job done when the car left the factory. Except for accommodating owners with repair parts, the builder had little to do with the car as it ground out its miles. That was the idea of service in the early days of automobile history.

But, now the manufacturer's conception of service is wholly different. The designing and building of a quality motor car is of first consideration, and hardly less important is the offering of a service that will make for complete owner satisfaction, or rather the complete utilization of the car's comfort, power and economy. In other words, the automobile builder wants the owner to get the most out of his purchase.

This general view of service is seen illustrated throughout the country in various ways. And when we consider the many letters coming from Buick owners in all sections of the United States, we feel that the nation-wide service policy of the Buick Motor Company stands alone as the most advantageous to the owner, whether he be at home or on tour. Buick service, like the Buick Valve-in-Head motor, has

undergone a steady, consistent development. And as it stands today, Buick service includes more than the mere furnishing of repair parts that are as genuinely good as the originals.

IF THE Buick Motor Company were casting bronze statues, for example, it would naturally devote its entire sales energy to getting the statues into the hands of buyers. And, there would be very little interest beyond the sale of the statues.

But, the Buick Motor Company is manufacturing an automobile, which, rather than being purchased as an adornment for a particular spot in the living room, is bought because of the service it is expected to render. The owner wants transportation.

While a motor car may be admired from the standpoint of beauty alone, one would hardly be justified in purchasing an automobile on the strength of its graceful body lines or delightful finish. True motor car efficiency is found only when there is a correct relation between power and load, comfort and safety, performance and durability.

It follows, then, that every Buick Valve-in-Head motor car owner should receive prompt and efficient service—the kind that means uninterrupted use of his investment. Upon this principle the Buick service policy was founded and developed until now the service organization covers the entire country like a great net-work of railroads with its stations in all the important cities and towns. No matter where a Buick owner goes, there is a Buick branch or Buick dealer close at hand ready to give intelligent attention.

BESIDES carrying a stock of genuine Buick parts, the Buick service station is prepared to co-operate with the owner in the things that go for increased comfort in car operation. Road routes, special tours, camping outfits, accessories, tire mileage questions, gasoline and oil consumption records—all of these things and many more, the Live Buick dealer is glad to talk over with the Buick owner. And it makes little difference with the dealer where the owner purchased his Buick.

For, it is a fact that when a man buys a Buick he becomes a member of the great family of Buick owners. He really becomes a part of the mammoth Buick organization.

Instead of being an isolated owner, with no particular place to go for motor car advice or attention, he has within his very reach a connection with the world's most successful builders of Valve-in-Head motor cars—a connection in which he finds the manufacturer's representatives willing to go more than half way in the solution of car problems that may arise from time to time.

This willingness on the part of dealers is the expression of their co-operation with the Buick Motor Company in helping the owner get the most out of his motor car. Further co-operation between dealer and maker is evidenced in the way suggestions from the main office are followed by the service managers in all sections of the United States.

When dealer and maker are working together for the mutual benefit of the owner and themselves, it is quite the logical thing to see an owner join forces with them for the advantages he will receive.

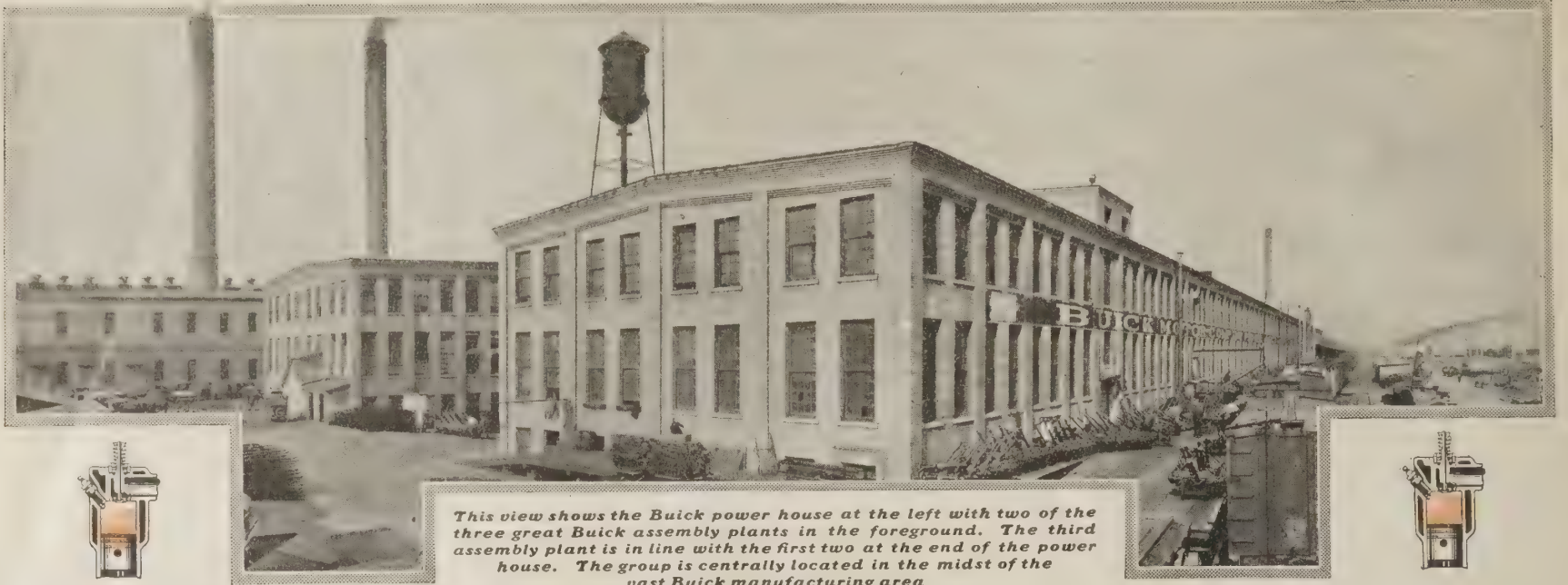
AS A MATTER of fact, there is really no one to turn to but an authorized member of the Buick organization for genuine Buick service. On first consideration, it might seem that any concern could deliver satisfactory service so long as they have some knowledge of motor cars in general.

Consider for a moment such a simple thing as having a car washed at a service station. Washing a car is an ordinary task for any garage or service station. But, in fact, it requires painstaking care to wash a car properly. The job can be turned out quickly with little respect for the finish or the interior of the car, or it can be treated heedfully. A Buick car is handled respectfully at a Buick service station because anything a service station does to a Buick has a bearing on the reputation of the Buick Motor Company and its product.

So it goes with all the various phases of motor car service. The independent station cannot be so well equipped in knowledge and methods as the authorized Buick service station because the suggestions made by the Buick Motor Company are distributed only through the Buick dealers' organization.

Every member of the Buick service organization profits by the experience of other members. Results of extensive work being carried on in the main laboratories of the Buick Motor Company are constantly being sent to the authorized stations. All the latest developments naturally reach the dealer first. He is best fitted to meet the needs of the owner.

Buick service is characterized by the same thoroughness that marks the production of Buick Valve-in-Head motor cars. Just as the owner would accept no substitute for a Buick car, he should take no substitute for Buick service. And as we do not in any way wish to affect the friendly attitude of a single Buick motorist toward the Buick Motor Company, we suggest that the owner be positive, so far as possible, that he select an authorized Buick representative whenever it should happen that he might need advice or his Buick Valve-in-Head motor car need attention.



This view shows the Buick power house at the left with two of the three great Buick assembly plants in the foreground. The third assembly plant is in line with the first two at the end of the power house. The group is centrally located in the midst of the vast Buick manufacturing area

HOW BUICK IS BUILDING FIVE HUNDRED CARS A DAY

BUICK engineering and manufacturing skill is, perhaps, most clearly visualized in the final assembly plants, where the mechanical units of Buick cars are collected, assembled into a consistent whole and leave as the finished product of the Buick Motor Company. Starting at one end of the long assembly line, the chassis moves steadily along, developing, as it passes from stage to stage, until it reaches the end of the plant and leaves under its own power. And the precision and accuracy with which the various units slip into their proper places, each with its distinct relation to the other, exemplify Buick harmony and co-ordination.

The three final assembly plants, located in the center of vast Buick manufacturing area, are encircled by the individual factories—rear axle, motor, transmission plants and the like—where Buick parts are made. Each of these plants is complete in itself and follows the Buick plan of progressive manufacture. The re-handling of material and parts is eliminated wherever possible. From the beginning until the unit is completed, each man or group of men have certain duties to perform.

From the separate factories the finished parts progress toward the three final assembly plants, which, with six lines or tracks for assembling cars, are able to take care of the enormous Buick production.

The progression of a chassis along the assembly line is, indeed, a revelation to the layman. Before his very eyes he sees a Buick car take form in a surprisingly short time. To him, the development is spectacular; to the engineer, it is but the accomplishment of skilled designers and efficient machines and workmen.

In the three plants, there is one line for each of the six Buick models. The clock-like movement of the chassis along each line is fundamentally the same.

The assembly naturally begins with the frame—the frame-work around which the entire car is constructed. This exceedingly important unit enters the assembly plant at the front of the ground floor. Mounted on a truck, the frame moves along the first track,

collecting the various members and supports. Brackets, step hangars and the rear spring supports are first rivetted on as the glowing rivets emerge from the forge and are driven firmly in place by powerful pneumatic hammers. One man operates the hammer, another holds the member in place and the third inserts the rivets. Each unit has its particular place along the line; each man has his particular work to carry out. And in the suspension of the pneumatic hammers from the ceiling, within easy reach of the operator, we have the first indication of the time and labor-saving devices used along the assembly line.

After the front and rear springs have been bolted into place with pneumatic wrenches, the front and rear axles are substantially attached to them. The chassis has then passed the preliminary stage and is ready to start on its journey down the main assembly track.

So the frame is lifted by a pneumatic hoist, turned over and raised through an opening to the second floor, where it is again mounted on

small trucks. Before it enters the line, grease cups and other small parts are fitted.

Even up to this time in its development, the chassis can be recognized as being distinctly Buick. But, when the Buick Valve-in-Head motor is placed in position, the layman realizes that here is a Buick car in the making.

The Valve-in-Head motor comes to the line completely assembled. With it are the transmission and the clutch and the first step in its instalment is the attaching of the automatically-lubricated universal joint to the drive shaft. The three points of motor suspension—the front cradle and the two rear arms—are bolted in place. And the Buick Valve-in-Head motor—sturdy and dependable—is in a position where it receives the least strain from continuous driving over rough roads. The three-point suspension, as designed by Buick engineers, is accomplished.

The steering gear, previously assembled at the head of the line, is next fitted to the chassis and connected to the fore and aft steering rods. And as the muffler and brake rods

are attached, one sees the working out of the great Buick principle of manufacture—specialization. Each man is a specialist. He is proficient in doing one thing. He is like a member of a ball team—thoroughly experienced and qualified to handle his position. And the group on each job works as a team.

Soon after the Buick Valve-in-Head motor is installed, the exhaust pipe is attached, connecting the

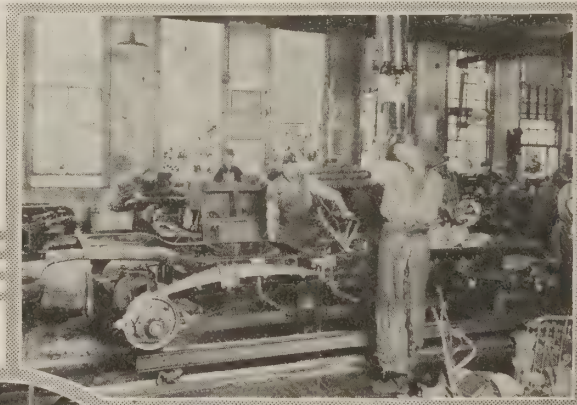
front end of the motor with the muffler. With this construction, the Buick takes the heat of the outgoing gases away from the driving compartment, thus establishing one of the comforts of Buick operation.

Before the chassis passes to the next step in its fabrication, the carburetor, vacuum feed tank and other units about the motor are placed in their proper positions.

By this time, the chassis has taken complete form. If it were necessary, it could be driven under the power of its own Valve-in-Head motor. So, the motor reservoir is filled with oil and the transmission and rear axle are lubricated.



After the axles and springs have been attached to the Buick frame, it is lifted from the ground floor to the second floor by a pneumatic hoist. This view shows two frames being raised and prepared to start down the two assembly lines in one of the plants



The chassis becomes distinctly Buick when the Buick Valve-in-Head motor is lowered into position soon after the chassis begins its trip down the line. The motors reach the line completely assembled, ready to be lifted by a pneumatic hoist



Before the chassis enters the painting room, it passes on a chain carrier through a steam room, where all oil, grease and foreign matter on the surface are removed with live steam. This leaves a clean facing for the enamel

With these stages finished, the chassis, still on the original truck it started at the beginning of the line, is moved forward to the steam bath. Here the chassis slips on to a chain carrier and enters the steam room to be thoroughly cleaned in preparation for the paint and enamel. Jets of live steam are turned on every part of the chassis. All foreign material that would injure the finish of the car is removed.

The chassis is then thoroughly dried before it passes to the next stage where it is painted by compressed air brushes. A thin layer of paint is spread over the complete chassis.

Meanwhile, the carrier has been moving forward slowly and the chassis is ready to go into the long drying and baking rooms. Exposed to the correct temperature for a certain length of time, the paint is firmly set. The chassis returns to view again with the beautiful finish so characteristically Buick.

No sooner is the chassis out of the drying room, than a group of men begin to put in the final touches of assembling. The gasoline tank is fitted; the spark plugs are screwed into place; the motor covers are attached and the front and rear wheels, which come from the floor below with tires inflated, are placed on the axles. The radiator and running boards also become parts of the Buick chassis at this point.

The chain carrier drops from beneath and the chassis rests on its tires for the first time. In less than five complete revolutions of its wheels, it will be running on its own power.

The chassis is pushed ahead until it is directly below an opening in the floor above. And here the body is carefully lowered until it settles on the frame of the car.

During the course of the chassis development, the body has been undergoing almost similar growth on the upper floor. So that when the chassis and body meet, they are virtually complete in themselves.

The body has been upholstered, painted and fitted. It is ready to join the chassis with the greatest ease and convenience.

The dash board instruments, which come with the body, are coupled with their fittings as the body is bolted to the frame. The headlights and windshield are added. Seat cushions, made in the Buick factory near the assembly plant, are put in place. Then the hood is placed over the motor and, as one of the men fills the radiator, it seems that the car is about completed.

And, yet, on the next and final stage in the assembly of Buick cars, workmen are busily engaged fitting the top and side curtains. The slanting windshield braces form the front support for the high-grade top. Each curtain is fitted separately and accurately.

At this point, a man enters the driving compartment, takes the wheel and drives the car from the assembly plant into the adjoining inspection room.

It is now in the domain of the zealous inspectors. They pounce upon it like men of the tribes seeking prey. They go over it from stem to stern in an effort to find defects or irregularities. On the slightest pretense, the car is removed from the regular channels of progression and exam-



Here the chassis is shown after it has left the enamel baking rooms and passed through several stages. Running on its own wheels and with the front fenders in place, the chassis begins to take a more acceptable form



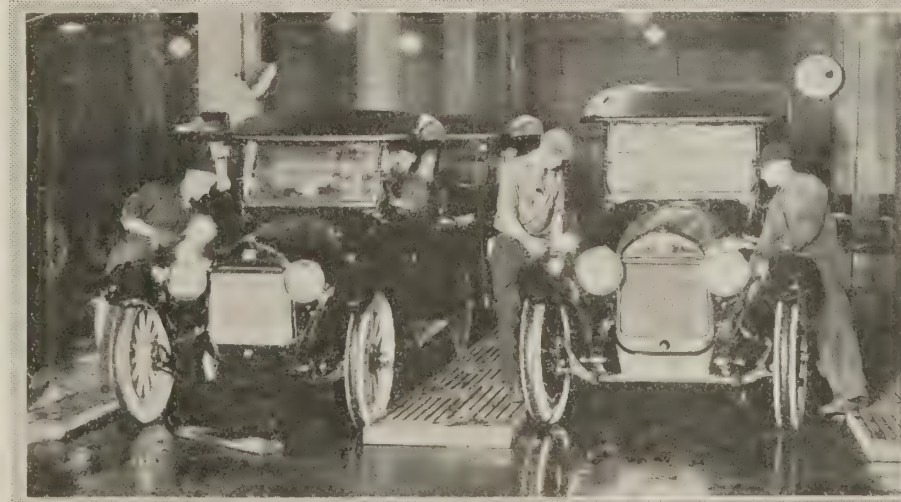
During the course of the chassis development, the body has been undergoing almost similar growth on the upper floor. When the body and chassis meet, they are virtually complete in themselves. The body is lowered through an opening in the floor and is quickly fitted to the frame



After the body is in place, the top and side curtains are carefully fitted. Here the Buick is shown leaving one of the final assembly plants under its own power and entering the adjoining inspection room, where it is gone over carefully by inspectors, each checking particular points of the car



After the car passes the inspectors' tests, it is driven to the warehouse and shipping dock. The third assembly plant may be seen at the right connected to the enamel plant by the enclosed bridge. The drop forge plant is shown in the right foreground



Upon arriving at the warehouse, sales department inspectors again go over the car, looking especially for any possible defects in the finish. With their approval, the car is pronounced acceptable to join the hundreds of thousand other Buicks

ined again. Each inspector, like the men along the assembly line, has a particular duty. He has certain parts and features to check. For instance, one man will look over the upholstery while another is seeing that every grease cup is accounted for.

The engine inspection is particularly severe. Men, long experienced in Valve-in-Head construction and operation, listen with keen ears and feel with sensitive fingers for signs of variation in motor performance. All of the ignition and gasoline throttle connections are tested for proper control. The correct clearance between the valve stems and push rods is again verified.

Once these inspectors are satisfied as to the assembly of the Buick car, they attach their mark of approval, and the Buick automobile passes from the hands of the production department into control of the sales department.

However, before the sales department finally accepts the car, its inspectors must also be convinced as to the thoroughness of Buick construction.

The car is driven from the assembly inspection room to the warehouse, where it undergoes further exhaustive attention. Under the glare of searchlights, specialized inspectors look over every part of the car. The finish of the body is particularly noted.

And, as complete and thorough as the sales department test is made, it is seldom found necessary to turn back a car to the production department as unsatisfactory because of the whole-hearted spirit of co-operation that exists between the two departments. Every effort is made by the production inspectors to see that there is not the slightest variance from specifications before the car leaves their department. Everything is done to make Buick production run smoothly and correctly. A car imperfect in the least detail passed by the assembly inspectors would only retard manufacturing by coming back.

This co-operation is typical throughout the entire Buick factory, where all plants are working for the welfare of the Buick car as a whole and thus, indirectly for their particular department.

After having passed the final inspection, the car is driven into the mammoth warehouse, which has a normal capacity of 1,000 cars. But seldom, however, is the warehouse filled with cars, so quickly are Buicks loaded for shipment.

The car, which only a comparatively short time ago was separated in its individual units, is now ready for shipment. On orders from the Sales Department, the Traffic Department loads it in a freight car.

Three things make possible this wonderful development of a Buick car in such remarkable time:

1. The absolute interchangeability of parts and units.
2. The scrupulous care exercised throughout the entire Buick factory.
3. The skill of Buick engineers in designing and the skill of Buick workmen in putting into practice labor and time-saving methods of manufacture.

AS gently and smoothly as the gondolas skim through the canals of Venice, Buick motor cars glide along highways with the power and strength that make unimproved roads and hilly country easy going. Wherever the ways and by-ways of civilization lead, Buick cars will be found carrying their passengers with comfort and satisfaction.



The Buick Model K-Six

It matters little which one of the six Buick models you possess—they are equal in performance. They differ in body type only. The graceful lines and beautiful finish of this model K-Six-50 are no more striking than its dependable power and marked roadability—endorsed characteristics of all Buick models, open and enclosed.



o Seven-Passenger Sedan

Buick Cars Show Versatility



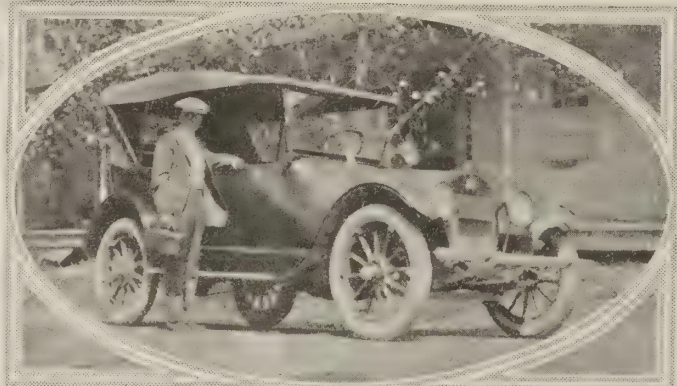
The floral parade at Enid, Oklahoma, this year was marked by beautiful and novel designs in car decoration. By completely covering and still maintaining the graceful lines of a Buick, Smith and Smith, Enid Buick dealer, was creditably represented in the parade.



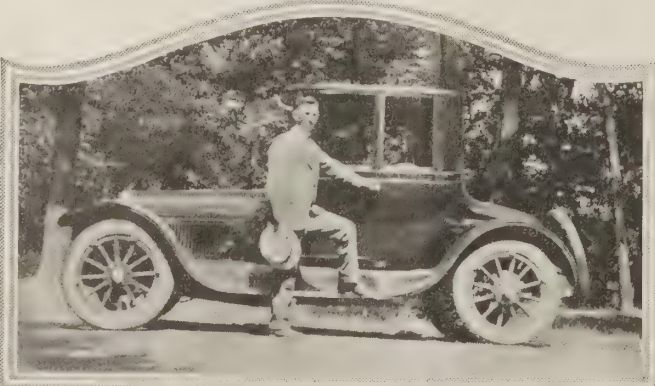
At the Grand Rapids, Wisconsin, home-coming celebration, "The Car with Lines" and pretty girls played an important part in welcoming visitors back to their old home. The Buick was attractively decorated by William Schill, Buick dealer at Grand Rapids.



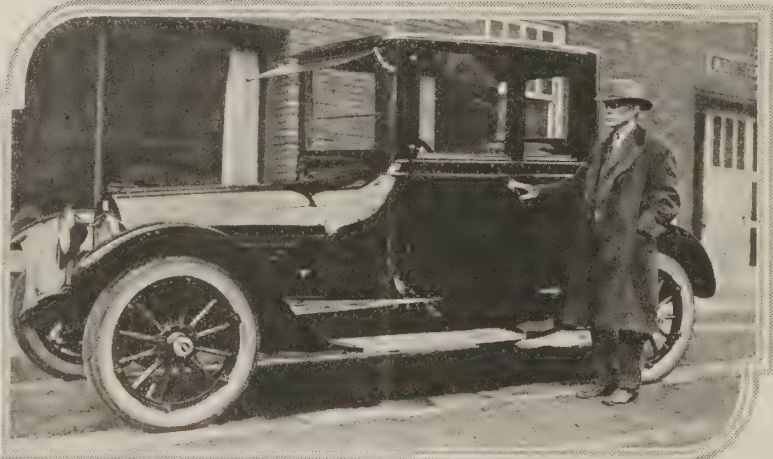
"I have owned five different cars and I can say that the Buick Roadster is the best car I have ever driven for ease of operation," writes E. J. Hutchins, manager of the East Central Illinois agency of the Illinois Life Insurance Company. Mr. Hutchins depends on the Buick in business hours and enjoys it in times out of business hours.



Dr. Ward Nostrum, of Mexico, Pennsylvania, says the real test for a car is to subject it to the daily grind in the life of a country Pennsylvania physician. Of his Buick Model E-6-45, he writes: "Over all kinds of roads, through snow drifts and mud, wherever I used to go with my horses, this grand old car has carried me without a moment's hesitation. I can honestly say I have never been called upon to employ all its power. Though I have driven it over 14,000 miles, sometimes spending all day and half the night in its comfortable front seat, I have never been tired because of riding. The car has had care, of course, and it has faithfully cared for me."

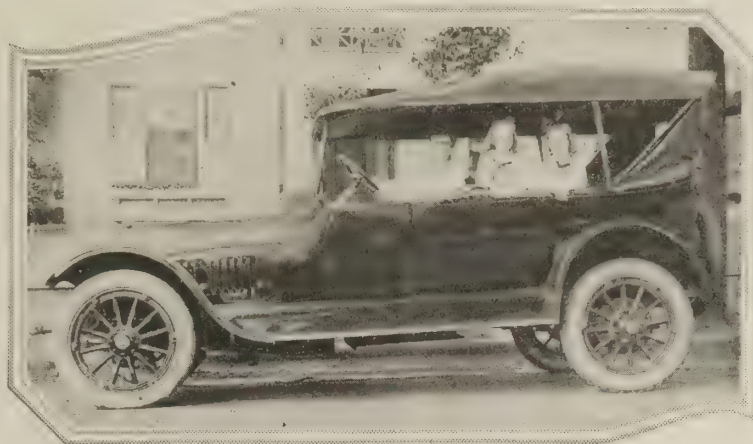


It is not uncommon to receive the praises of Buick owners in point of increased comfort, better performance and the longer life they are getting from their cars. But C. E. Darner, dealer in monuments, mantels and tile work at Hagerstown, Maryland, has all of these things to say and, in addition, that his Buick Coupe has helped him to increase his sales by twenty per cent. Mr. Darner writes that in all his journeys through the mountains, his Buick has never failed him.



For year-round comfort in driving, Lee Hays, of Bloomington, Illinois, insists on an enclosed Buick. Mr. Hays, who is the father of T. K. Hays, the Buick dealer at Bloomington, is at present using his Buick Coupe as the means of transportation between his farm and the city. He believes that he has made the most economical purchase possible.

Buick Owners in Tyler, Texas



This Buick Model E-6-49 is owned by Mr. Oscar McFarland, president of the People's Guaranty State Bank. Mrs. McFarland is seated at the wheel with her twin granddaughters in the tonneau.



Dr. A. P. Baldwin, one of Tyler's leading physicians and surgeons, is particularly pleased with the performance of his Buick Coupe. He uses it regularly in making professional calls.



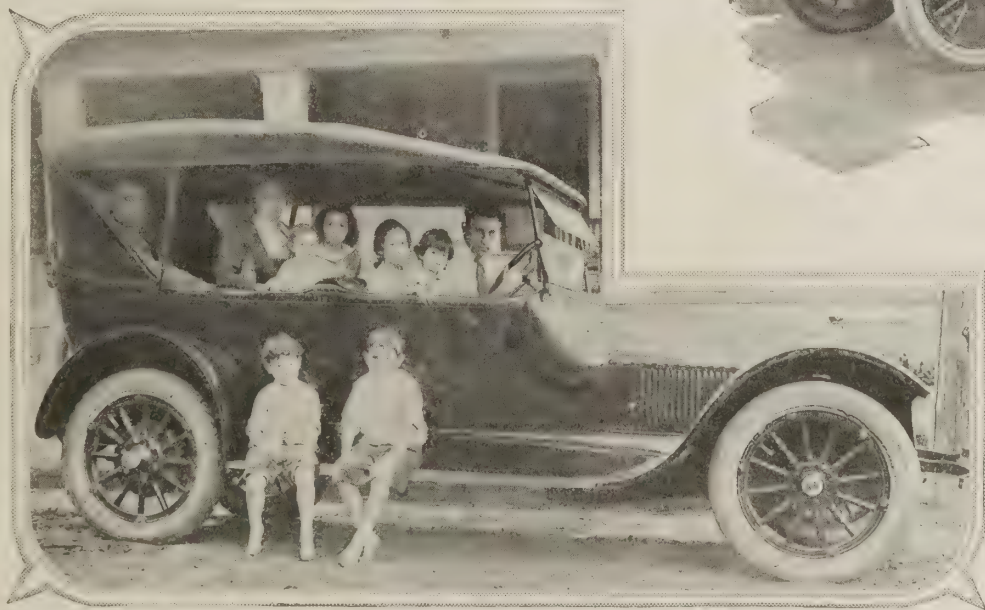
Mr. J. P. Hanway drove his Buick Model E-6-45 from Tyler, Texas, to New Orleans, St. Augustine, Florida, and then through Washington, D. C., into the New England states. He returned by way of Niagara Falls in Canada, Buffalo, Toledo and the Mammoth Cave. Although Mr. Hanway had driven the car about 12,000 miles before starting on this trip, the only repairs, or replacements, other than tires, were limited to a new fan belt and the removal of carbon.



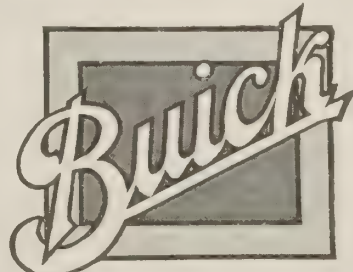
Mrs. Pope, wife of Dr. Irvin Pope, says her Buick is the most beautiful car in Tyler. There may be a difference in opinion on the part of other Buick owners. However, Mrs. Pope says she likes her car better every trip she makes.



This is the third Buick that has been owned by Mr. Albert Sledge, president and general manager of the Moore Wholesale Grocery Company. Mr. Sledge was chairman of the Victory Loan Campaign, which made such a good record in this country. He is quite satisfied with Buick Valve-in-Head performance and durability and he proves it by saying that he could not be sold any other make of car. He is one of Tyler's most ardent Buick enthusiasts.



This Buick owned by Mr. A. Golenternek is, indeed, a family car. Mr. and Mrs. Golenternek are shown here with seven of their fourteen children. There were no 16-passenger automobiles available when Mr. A. Golenternek decided to buy a motor car for Mrs. Golenternek, himself and fourteen children. So he looked around for one that would meet his needs in point of double service, safety, durability and economy. He selected a Buick K-Six-49, the ideal family car. Mr. and Mrs. Golenternek are shown here with seven of their fourteen children.



The trademark of the pioneer builders of Valve-in-Head motors



Keeping the Car in Trim

Suggestions for the Care and Adjustment of Buick Cars



Cold Weather Precautions

EACH winter sees more Buick Valve-in-Head motor cars in year-round service. Cold and stormy weather makes a comfortable motor car more desirable than ever and to meet the need for dependable transportation in snow and sleet, Buick owners are relying on their private cars rather than public taxis.

Besides the physical perfection evidenced in Buick open and enclosed cars, there are the mechanical features of the Buick Valve-in-Head motor and related units that give the owner comfort and pleasure in winter driving.

But with all the care and attention Buick engineers have given to the all-weather performance of Buick motor cars, there are two chief precautions the Buick owner should take to insure uninterrupted service. The first is to see that the cooling system is properly protected against freezing and the second is to see that the motor, transmission and rear axle are correctly lubricated.

Unless the car is kept in a heated garage, it is advisable to drain the water from the radiator nights during early winter. When the severe weather comes, an anti-freeze mixture should be used.

There are various kinds of anti-freeze solutions. The simplest form and, perhaps, the most satisfactory is a mixture of water and alcohol in proper proportions, which vary according to the temperature.

For temperature ranging from the freezing point to zero, mix 4 ounces of glycerine and 1 gallon of alcohol with three gallons of water. When the temperature drops to a point below zero, 1½ gallons of alcohol and 2½ gallons of

water should be used. Either mixture makes sufficient solution to fill the entire cooling system. The glycerine prevents rapid evaporation of the alcohol.

Before the anti-freeze solution is placed in the cooling system, it is best to remove the drain cock at the bottom of the radiator and after the water has drained out, to thoroughly flush the system until the water runs clear.

After the solution has been placed in the system, it will be necessary to add additional glycerine and alcohol from time to time because alcohol, boiling at a considerable lower temperature than water, will evaporate much quicker than the water. The safe practice is to add sufficient alcohol to fill the radiator to the proper level.

The main point to consider in the lubrication of the motor during winter is that oil loses its lubricating qualities faster during cold weather. When the motor is cold a certain amount of the gasoline mixture on coming into contact with the cold cylinder walls condenses and runs down the cylinder walls into the crankcase, thinning out the motor oil.

This means, then, that the crankcase should be drained and replenished more frequently in winter than in warm weather. At the beginning of the cold season and every 500 miles

during the winter, the crankcase should be flushed out and filled with fresh oil of good quality.

As for the transmission and rear axle housing, it should be remembered that thick oil, like molasses, becomes congealed at low temperatures. This tendency may be overcome by thinning out the lubricants with motor oil at the beginning of cold weather. The best proportion is one-half motor oil and one-half heavy oil.

This precaution is quite important because if it should become cold enough it may happen that all the lubricant in these two units will stick to the walls of the housing in a compact mass, leaving some of the gears to revolve without the necessary lubrication. Even should this unusual case occur, it will be found that adding the motor oil will greatly facilitate shifting gears in cold weather and will insure smooth operation of both units.

Another point often advisable to attend to is the removal of the drain plug on the gasoline tank every 500 miles or so. This allows water or sediment settled from the gasoline to escape. On an extremely cold day it is possible for a few drops of water to freeze in the system. Although it rarely happens, it is an extra precaution against delays. For the same reason the drain plug at the bottom of the vacuum feed tank should be removed occasionally.

There is no danger of the battery freezing so long as it is kept charged and supplied with sufficient distilled water. It should be tested with a hydrometer at least once a month and if the gravity is not up to 1.275 it should be charged at once.

Everybody knows

Valve-in-Head means Buick

When Better Automobiles Are Built Buick Will Build Them

Requires Little Attention

MY Model H-Six-50 is the seventh Buick I have owned, and every new one is better than the others," writes Mr. L. E. Dexter, of the Dexter Roofing Company, Elmira, New York. "I drive from eighteen to twenty-five thousand miles a year, over all kinds of roads—the majority of this mileage in looking after my roofing business.

"My Buick is always ready to go, due to the fact that it requires but very little attention, and does my work cheaper and better than many other makes I know of, a number of which I have owned."

Buyer Gets His Money's Worth

DR. M. A. WALKER, of Dillon, Montana, writes that he is now using his third Buick, a Model E-Six-45. His former Buicks were the C-37 and D-Six-45. Regarding the Buick E-Six-45, he writes:

"Its power is ample for all conditions; its speed is greater than one can use on ordinary roads and the engine stands up well under rough usage.

"Taken altogether, I believe that in Buick cars the buyer gets his money's worth. If I did not, I should be using some other make of car."

Best Car Under \$3,000

I HAVE had two Buicks," writes Mr. Taft, of Union Hill, N. J. "The first one was a D-Six-45, which I ran 15,000 miles on about \$20 in repair bills. I sold this car at \$100 less than I paid for it and then bought an E-Six-49, which I still have. I have driven it about 10,000 miles, having the carbon removed and the valves ground. I made a remarkable record on a 145-mile trip through the mountains. Two of the original shoes are still on. I am absolutely satisfied and recommend it highly as the best car under \$3,000."

Has Driven Buicks for Six Years

I HAVE been using Buick cars for the past six years," writes Dr. Edward M. Tracy, of Lackawanna, New York, "in summer and winter, in all kinds of weather and over all sorts of roads. They have rendered excellent service, being sturdy, easy-riding, dependable cars."

What an Owner Thinks of Buick Service

Wilmington, N. C.

Buick Motor Company,
Flint, Michigan.

I have a K-6-45 Buick and have just returned from a trip of about 2,000 miles.

On this trip I visited a good many garages and service stations, and among them the Buick station at Harrisonburg, Va. At that place I had a new speedometer cable installed, a welding job done and several minor matters attended to about the car. I was delayed only one hour to have all the work done.

The promptness and courtesy of the management of the garage, as well as the general air of efficiency and the reasonable charges, were all so conspicuous that I feel compelled to write you this letter and mention it, and to say that I received there the best attention that I had on my entire trip.

I did not make note of the proprietor's name, but the garage was advertised as a Buick service station and is located on the auto route through Harrisonburg.

Yours very truly,

C. VAN LEUVEN,

Vice-President, Tide Water Power Company.

This letter from Mr. Van Leuven is one of the many constantly being received from Buick owners regarding the excellent service offered by the Buick dealers' organization. Letters of appreciation have come from every corner of the country—the large cities as well as the remote rural towns.

Appreciates Buick Courtesies

I HAVE just returned from a trip in the southern part of the state," writes Mr. Hugh McCurdy, San Francisco attorney, "and I thought you might be interested to know what service I have had from my Buick, five-passenger touring car, which I purchased in April, 1918. On the trip I drove 8,358 miles with a very high gasoline mileage.

"During the year and a half I have driven the Buick, in all kinds of weather and over different roads in the state, I have never expended anything for repairs. I also wish to thank you for the many courtesies extended me by your company during the time that I have been a Buick owner."

Buick of 1910 with Same Owner

MR. JOHN SMALL, of Polo, Illinois, bought a Buick in 1910. Mr. Small, who is 73 years old, is afraid he will not be able to wear out his Buick. In a letter to the Buick Motor Company, he writes:

"I sometimes remark that my Model 19 runs just as well as ever and my wife says it runs better because I know how to handle it better. I have never been pulled in and have never found a hill that the car would not climb.

"I still have three of the old spark plugs in the motor. I have not seen a car that has as good trimming as my old Buick. When I washed it a while ago, my friends wanted to know if I had painted it."

"The Only Car Made"

AFTER driving my D-Six-45 nearly 20,000 miles, this spring opening up the third season for her, I sold the car for \$1,000," writes Mr. A. J. Neelings, of Cresco, Iowa. "My expense for this mileage was one battery and castings for steering knuckle. Of course I could not be without a car and there is only one made and that's a BUICK."

BUICK SERVICE IN PRACTICE



The type of service cars used by Eldridge Buick Company, dealers in Washington

A RECENT application of the Buick service idea brought to the attention of the Buick Motor Company is that of the Eldridge Buick Company in the state of Washington. It is an illustration of the possibilities in beneficial motor car service, from the standpoint of both owner and dealer.

The Buick service policy has been commended from coast to coast, boundary to boundary, and we are constantly receiving letters from owners praising Buick Valve-in-Head motor cars and the efficient, painstaking service of Buick dealers everywhere. With the development of the original Buick Valve-in-Head motor there has been a like development, or broadening out, of the Buick service plan, and the work of the Eldridge Buick Company in Washington serves as an excellent example of the working out of Buick service policies throughout the United States for the Seattle distributor has followed closely the plans and suggestions of the Buick Motor Company.

A motor car to be of the greatest value to the owner must function consistently.

Long and consistent functioning is obtained by the Buick in two ways. In the first place, the Buick Motor Company builds service into its product. The Buick chassis, including the Valve-in-Head motor, is as correctly designed and manufactured as Buick engineering skill and years of experience have been able to make it. The thorough consistency of the Buick is reflected in its performance.

With this built-in service, the Buick dealers' organization offers a service that will assist the owner in maintaining his Buick for long and consistent functioning.

It is in this respect that the methods of the Eldridge Buick Company are making Buick service the talk of Buick owners throughout the length and breadth of Washington.

Primarily, the Eldridge Buick Company is carrying out in Washington the Buick plan of organization for the whole country. The Eldridge Buick Company dealers are linked up to them in much the same manner that

Buick branches co-operate with the main office of the Buick Motor Company.

One of the dealer's chief problems is to maintain an assortment of Buick parts to meet the occasional demands of local owners as well as owners on tour through their particular locality.

Just as the Buick Motor Company has what is known as a parts traveler calling on the different branches, the Eldridge organization has a man visiting its dealers with the view of standardizing its service in the state and keeping the parts stock of each dealer in such order that he will be able to assist an owner quickly and efficiently.

The Eldridge Buick Company has on file at its Seattle office a list of parts in each dealer's stock. Besides helping the organization to keep stock live, this plan makes possible quick assistance to owners. When a dealer wires into the main office for a particular part, instead of filling the order from the Seattle office, the Eldridge company often advises a Buick service station near the first dealer to forward the part. Everything is done to meet the owner's need with the least delay.

By arranging the parts so they may be readily obtained when needed, the Eldridge dealers are prepared to handle the unusual requests of owners with expediency.

And each part of the dealers' stocks is in every respect up to the Buick standard because the dealers realize that the assurance of future business in the sale of new cars rests upon the serviceability of each part as well as upon the serviceability of Buick Valve-in-Head motor cars as a whole.

This principle—the nation-wide policy of the Buick Motor Company—is followed throughout the Eldridge organization. By inspecting the stock in the various dealers' bins and keeping it up to a certain point, the Eldridge service representatives are insuring conscientious dealer co-operation.

But carrying a complete stock of repair parts does not tell the whole Eldridge story of service to Buick owners.

Another phase of this live organization's interest in Buick owners is illustrated in the adoption of service cars for hauling in damaged automobiles.

The car used in this service is reproduced on this page and with it are two illustrations of the new type now being used by Eldridge dealers.

These new service cars have sufficient power and durability to climb hills, pull in damaged cars or carry the necessary assistance and repairs for general work. They are completely equipped with a chain fall operating on an overhead track which enables the service man to load or unload any heavy parts quickly, or to raise one end of a car for towing.

Neatly finished in blue, these standard Eldridge service cars are attracting much favorable comment. The two cars illustrated here were sent to dealers at Walla Walla and Yakima. Additional ones are now being built for other dealers.

Every effort is being made to have the various dealers render the same service that has made Eldridge and Buick famous in Seattle. The dealers are taking hold of the plan readily and lining up with this service policy of the Buick Motor Company.

Such dealers are bound to benefit because they are establishing a reputation for themselves. Courteous and prompt attention to owners is giving Eldridge dealers a name synonymous with "service," the best evidence of which are the letters from Buick owners in their territory.

In the suggestions for improvements coming from the main office, the Eldridge Buick Company sees opportunities that will work to their advantage as well as to the advantage of the Buick Motor Company and they are quickly adopted.

With Buick built-in quality backed by the Eldridge organization, Buick owners in the northwest have a combination in car and service that cannot be equalled outside of the Buick organization.

TOURS BY BUICK OWNERS

IN September, 1912, I bought one of the first Buicks of the season sold in Milwaukee. It gave me such good service that in April, 1917, when I considered buying a new automobile, I purchased a Buick D-Six-45," writes Mr. F. W. Tolles, of Milwaukee, Wisconsin.

"Last fall Mrs. Tolles and I left Milwaukee in my Buick for Miami, Florida, going by way of Chicago. We found the poorest road on the entire trip while making a detour in northern Illinois. The third day out we spent in Indianapolis and the next day found us in Louisville, Kentucky. After driving through the beautiful parks, we went to Bowling Green, going over eight miles of cobblestone, which will ever be remembered by any tourist who has driven over it. The stones were evidently hard on our tires for the next day we had one blowout and two punctures, but we made Nashville, Tennessee, that night.

"We were advised to avoid going from Huntsville, Alabama, to Guntersville because tourists were having considerable trouble between New Hope and Guntersville. So about noon, we left Nashville, following the Birmingham-Dixie route to Pulaski, Tennessee, where we had good hotel accommodations for the night. We crossed the mountains to Albertsville, going through Eva and Hughes Lake, finding no guide-boards and very few people along the way.

"From Rome to Atlanta, Georgia, we had good roads, although it had rained for two nights. After staying over a day at Atlanta, we drove to Macon, which is a beautiful city. The next day we drove to Madison, Florida, over roads, which, with the exception of fifteen miles full of chuck holes, were fine. We learned more about driving through sand in going from Madison to Live Oak, Lake City and Gainesville. In driving to Palatka, we passed along a sandy woods trail most of the way.

"At Palatka we took a brick road down the east coast to Daytona and the next day to Palm Beach and Miami.

"The time consumed from Milwaukee was sixteen days, including the day spent in Atlanta and several half-days we rested.

"The gasoline and oil consumption was exceedingly low.

"After spending the winter in Florida, we started for home. We stopped at the beautiful little city of Orlando for several weeks, making many drives to the lakes and towns in that vicinity. We left Florida by way of Gainesville and Madison. We found considerable sand and some bad washouts.

"Through the peach belt of Georgia to Griffin, we found the roads badly washed out in places. Near here we discovered a slow leak in one of the tubes. This with the punctures and blowout (all in one day) going down gave us the only tire trouble while away from Milwaukee.

"Light showers during the night, made our trip to Nashville and Hopkinsville delightful. North of Hopkinsville there was a stretch of road where cars ahead of us had been mired, but the Buick managed to get us through without help. The roads continued to get better and we made Evansville, Indiana, where we had a broken brake rod repaired. We arrived in Chicago the eighth day out of Orlando, a distance of 1,396 miles.



The Buick camping outfit used by the Fosters on their overland trip from Stamford, Connecticut, to San Francisco

"On our arrival in Milwaukee, we found we had driven 6,396 miles. The only repair we made on the trip was the brake rod.

"The Buick ran day in and day out without the least kind of trouble. I cannot help but feel it is the most reliable car made."

Through the East in a Buick

WE never had a wrench or screw driver in use on a trip through the East," writes Mr. George B. Sprowls, who resides at Claysville, Pennsylvania, and is president of the Pennsylvania and Atlantic Seaboard Hardware Association, Inc.

"We covered the 2,000 miles in our Buick H-Six-49 without adjustments of any kind. We never boiled the water on any of the mountain climbs. We ran from five to forty miles an hour and the motor purred away as smoothly when we arrived home as when we started."

From Flint to Seattle

MR. and Mrs. M. J. Waller, of West Seattle, Washington, recently made a trip of 3,118 miles from Flint to the coast in a K-Six-45 Buick. Mr. Waller is a member of the Waller and Waller Real Estate Company of West Seattle. Before starting westward they toured 700 miles in Michigan. Leaving Chicago on the Southwest Trail, they drove to Lincoln, Nebraska, where they branched off on the S. Y. A. Trail. All through Iowa and Nebraska, Mrs. Waller was charmed with the myriads of wild sunflowers which flourished along the highways.

At Grand Island they found the Lincoln Highway and continued over it to Cheyenne, Wyoming, where they followed the Yellowstone Trail to Yellowstone National Park. At

Ellensburg they struck the Sunset Highway which led them straight home to Seattle.

"I particularly enjoyed the bright, interesting colors of the Golden Gate of Yellowstone near the Gardner entrance and Yellowstone's Grand Canon. The geysers were worth the whole trip," says Mrs. Waller.

At the little hamlet of Basin, Wyoming, the Wallers found hospitality plus. Tourists are made welcome in Basin. Shower baths, clean camping grounds, screened-in kitchens, free cooking gas and laundry trays were provided for the comfort and convenience of

the tourists. All the way from Chicago to Seattle the Wallers travelled with camping simplicity and completeness.

"The auto bed, which we purchased in Chicago and which we laid on top of the seats, was the best ever. I tied the tent down to the wheels at night and thus the car was protected from the friendly but meddlesome bears of Yellowstone. We had the best little dressing room in the world.

"Our dining table was the lid of the box cupboard which we fastened to the running board. Not once did we enter a hotel on the journey across country."

Buick in Stafford, Kansas

IHAVE had two Buicks. One I drove about four years on running expenses alone. I traded this Buick for another."—Warren Blackburn.

"My experience with a Buick car started when I bought one in 1912. I think a Buick is hard to beat. I prefer it to any other make of car."—Sam Newell.

"I have two Buicks, one of which I have driven for about ten years. It has always given me the best of service. I have had my other Buick two years now. If I were to buy another car tomorrow it would be a Buick."—J. L. Spickard.

"I drove my Buick 37 nearly five years and it certainly gave me good service. About the only expense has been for tire and gasoline."—Fritz Volker.

"Buick Only Car for Trip"

WE had a fine trip from start to finish," writes Dr. Dean Foster, New York specialist, of his tour from Stamford, Connecticut, to San Francisco.

Accompanying him were his wife and three young daughters. The trip occupied four weeks, the party stopping occasionally along the route from Philadelphia across Pennsylvania and Ohio to Chicago and thence along the Lincoln Highway to the coast.

Dr. Foster carried a complete camping outfit, which he says was lighter than any he saw on the journey.

"The Buick ran fine," writes Dr. Foster. "We had no trouble except a little tire trouble due to punctures. I had the carbon removed and the valves ground at the Buick service station in Salt Lake City. I tell you they were a white lot of fellows. They certainly treated me fine.

"The Buick is the only car for the trip. Had anything happened, we could have called on one of the Buick agencies that are to be found in every town and that means a great deal to tourists."



Mr. F. W. Tolles, of Milwaukee, Wisconsin

Buick



As rapid as the development of enclosed body types has been, Buick designers have not lost sight of the fact that some owners still prefer to drive Buick open cars the year-round. The Buick interpretation of their needs is seen in the Buick open models for three, five and seven passengers.

The durable, weatherproof top, overlapping curtains that open with the doors, and the rain-proof wind-

shield offer protection from inclement weather in such way that perfect vision in all directions is not sacrificed, nor the removing or adjusting of curtains made inconvenient. These conveniences with Buick in-built quality, backed by an efficient service organization, afford the owner of a Buick open model comfort and satisfaction that can be excelled only by one of the Buick closed cars.

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Pioneer Builders of Valve-in-Head Motor Cars
Branches in all Principal Cities—Dealers Everywhere



The Buick Disc Clutch

BESIDES the fact that the Buick dry plate disc clutch is built entirely in the Buick factory, there are four main points of superiority that recommend it to the motoring public.

1. Extreme smoothness of operation.
2. Instant response to a light pressure on the pedal.
3. Easy gear shifting, due to the heavy rotating parts being carried by the flywheel.
4. Positive action over long periods of time, due to the quality and size of the friction surfaces.

Exclusive patented features contribute to the supremacy of the Buick clutch just as much as efficient manufacturing methods.

The clutch is formed by ten alternate discs, connected with the flywheel and transmission respectively, the faces of the disc being covered with high grade non-burning material. Half of the friction area would ordinarily be considered efficient but ten friction surfaces make the Buick clutch extremely gentle and positive in engagement. This type of clutch will wear for an indefinite length of time without the need or inconvenience of oiling.

The Buick clutch is another illustration of thoroughness in developing Buick mechanism from the standpoint of ease and convenience of operation as well as long life and performance.

The Buick factory is more than a mile in length and all Buick units are produced in this mammoth plant

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